UNIVERSITY OF CAPE COAST

EFFECT OF NATURAL RESOURCE ON FINANCIAL DEVELOPMENT IN AFRICA: THE ROLE OF ECONOMIC FREEDOM

JOSEPH ADDO GYAN

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BY

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:…… Date:……..

Name: Joseph Addo Gyan

Supervisor's Declaration

I hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Supervisor's Signature:……. Date:……

Name: Prof. John Gartchie Gatsi

ABSTRACT

Despite the numerous financial sector alterations carried out in various economies over the past few decades, there is evidence that financial development in Africa remains low. The inability of resource abundance economies to expand their financial sector has been linked in a growing body of literature to natural resource windfalls. This is due to a poor degree of financial growth on the continent as a result of rising corruption and rent-seeking brought on by the enormous resources found in Africa. Economic freedom has the ability to establish the economic conditions required to support improvement of the roles of financial market and institutions in an economy, and it is evident from research works that economic freedom is a significant element of financial development in resource rich countries. As a result, this study uses data from 1996 to 2018 and a technique called the "Generalized Method of Moment" to analyse the conditional impact of economic freedom on the effect of natural resources on financial development in African nations. The analysis employed the IMF's Financial Development Index, NRR, and a metrics of economic freedom from Heritage Foundation. The study's findings demonstrate how economic freedom transforms the adverse effect of natural resource into a benefit for the financial sectors of African nations. The report, thus, advises African countries with numerous resource deposit to formulate and implement rules and regulations that empower private individuals to own and control productive resources so as to exploit the windfall that accompany natural resource to support expansion financial sector.

KEY WORDS

Economic Freedom

Financial Development

Generalised Method of Moment

Government Size

Market Openness

Natural Resources

Regulatory Efficiency

Rule of Law

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DEDICATION

To my late mother, Ms. Janet Takyiwa and my entire family members.

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LIST OF ACRONYMS

A & P	Asia and Pacific
AF	Africa
EF	Economic Freedom Index
EU	Europe
FDI	Financial Development Index
GCF	Gross Fixed Capital Formation
GDP	Gross Domestic Product
GS	Government Size
HCI	Human Capital
INF	Inflation
INSTQ	Institutional Quality
LSDV	Least Square Dummy Variable Regression
ME & CA	Middle East and Central Asia
MOP	Market Openess
NRR	Total Natural Resource Rent
REF	Regulatory Efficiency
ROL	Rule of Law
TRADE	Trade Openness
WGI	Worldwide Governance Indicators
WH	Western Hemisphere

CHAPTER ONE

INTRODUCTION

This study purposely determined how economic freedom in Africa may or may not have an impact on natural resource on the development of the financial sector. Despite the fact that Africa's natural reserve industry generates significant revenue, the continent's financial system does not reflect this. The details of this chapter include the study's background, problem statement, purpose, research goals, and research hypotheses. The chapter also expatiate the study's relevance, its boundaries, its restrictions, the definition of terminology, and, lastly, how it was organized.

Background to the Study

Africa can be described as the hub of natural reserve as substantial part natural resources in the world are found on the continent. The continent produced 1 billion tons of mineral valued $406 billion in 2019. In addition, Africa harbours 30%, 8% and 12% of the world's mineral, natural gas and oil deposits respectively (Asele, 2020). In term of economic growth, natural resources contribute about 28% to the GDP of Africa (African Development Bank, 2016; Asele, 2020).

The natural reserves of every country is key to the acceleration of its economic development. Great countries on diverse continents, including Botswana, Canada, the USA, Ecuador, and Norway, among others, exploited the advantages of natural resource windfalls to grow their countries (Namazi & Mohammadi, 2018). Natural resource windfalls are the main source of income utilized to fund development projects in the least developed nations of Africa (Venables, 2016). In a nutshell, natural resources raise the standard of living for

people. Recent research has shown that, on average, nations with less natural resource deposits develop more quickly than the majority of resource-rich economies, despite both empirical and theoretical evidence that resource deposit are relevant for economic development (Badeeb, Lean & Clark, 2017; Guan, Kirikkaleli, Bibi & Zhang, 2020). For example, in the early modern period of Europe (seventeenth century), although Spain had influx of minerals from its colonies, its level of economic development could not match resource-poor Netherlands. Also, in the nineteenth and twentieth centuries, Switzerland and Japan which were less endowed with natural resources developed at a faster pace than resource-abundant Russia. In addition, Taiwan, Korea, Hong Kong, and Singapore are a few Asian nations with limited natural resources but rapid economic development (Sachs & Warner, 1995).

This paradox depicted by natural resources' influence on development is described by as a "natural resource curse" by Auty (1994). Examples of nations with abundant natural resource reserves but slow economic growth include Niger, Burkina Faso, Guinea, and Venezuela (Zalle, 2019; Tiba & Frikha, 2019).

Dwumfour and Ntow-Gyamfi (2018) assert that effectively applying windfalls generated from the resource-sector can enhance the banking sector both directly and indirectly. That is, effective use of natural resources may raise bank deposits and savings, leading banks to lend more credit to private persons and businesses, especially in economically freer economies. The increased access to income will spur up economic activities across the various sectors of the economy leading to long-term economic development (Beck & Demirguc-Kunt 2006).

Natural resources provide an important avenue through which financial institutions could improve deposit mobilisation. Banks in resource-rich countries become liquid as a result of revenue deposited by firms and individuals operating in the resource sector. Banks in resource-rich nations are also flashed with taxes paid to the government by firms and individuals operating in the natural resource sector (Dwumfour & Ntow-Gyamfi, 2018). Furthermore, resource-rich nations can use their natural resources as lures to draw in private investment from other nations, particularly if they enjoy a high degree of economic freedom. These investment capitals are, mostly, directed through financial institutions; hence the private sector will enjoy more credit facilities from banks leading to improved financial development in resource-abundant countries (Bhattacharrya & Hodler, 2014).

Despite the contributions of resources windfall to the development of African nations, they may hinder the growth of the financial sector, particularly when a nation's level of economic freedom is very low. Factors - deteriorating institutional quality, rent-seeking, corruption and Dutch disease – which are prevalent in low economic freedom countries have been identified as the main economic channels through which the natural resource curse functions to subvert accessibility and effectiveness of financial market and institutions (Badeeb et al., 2017). In resource-dependent African countries, where government intervention is mostly substituted for free market, natural resource is likely to promote rent-seeking in the form of corruption, smuggling and black market with their consequential negative effect on private investment, economic growth, and entrepreneurship (Adams, Adams, Ullah, & Ullah 2019; Krueger, 1974). Chakraborty and Dabla-Norris (2006) argued that rent seeking causes

diversion of resources from fruitful sectors of the economy towards appropriative activities. This serves as disincentive to investment and reduces production opportunities.

Cooray and Schneider (2018) have noted that when the institutions of a country do not promote the freedom of individuals to own and control income generating assets, corruption and rent-seeking are more common than investment and the production of goods and services. Corruption and rent seeking appropriate larger portion of productive resources to the ruling elite at the expense of society (Bulte & Damania, 2008). This serves as a hindrance to savings and private investments leading to a decline in the level of domestic income. A declined domestic income reduces savings and deposits by private entities which affects liquidity of the financial sector (Gurley & Shaw, 1955). Once more, Khan et al. (2019) and Shaohua, Yahya, Pham, and Waqas (2021) emphasized that governments in economies with vast resource reserves strive to nurture bribery and unearned income, which generates selection of unqualified investment for facilities and financing of unprofitable investments. Adverse selection and morale hazard impede financial development as banks may grant more credit to high risk borrowers leading to a rise in non-performing loans in the financial sector.

Cooray and Schneider (2018) also added that bribery and desire to increase an unearned income gain grounds when the effort of the free market to determine prices of goods and services is thwarted by government interventions. That is, excessive government intervention in resource-rich economies may promote the desire for economically unearned incomes, diverting income and

savings from entrepreneurial and investment activities and harming financial development in the process.

Furthermore, resource-rich nations are charaterised with hesitations to enforce commercial contracts and uncertain private property rights (Bhorat, Chelwa, Naidoo & Stanwix, 2019; Bhorat, Chelwa, Naidoo & Stanwix, 2017). Ruling governments in resource-rich countries are not motivated to promote quality institutions which could destruct them from rent-seeking (Matallah&Matallah, 2016). Low level of contract enforcement and uncertain private property rights in resource-dependent economies may discourage financial institutions from granting loans to the private sector for fear of losing their investments. Besides, it's possible that few people can obtain credit facilities from financial institutions, and when they can, the costs may be greater. The financial sector's accessibility and effectiveness could be impacted by this phenomenon.

Economic freedom, the autonomy of an individual to select, secure and use productive resources, in an economy has the potency to cover some of the media via which resource curse operate in African countries. High level of financial freedom that exist in an economically freer countries decreases adverse selection and morale hazards which mostly operates in resource rich countries. The financial sector will experience a decrease in bad loans and a surge in efficiency if the granting of loans to unqualified people and financing of highly risky investments are eliminated (Savage & Wright, 2003). Once more, private organizations with sound investment strategies can obtain funding for investments in various economic areas (Azman-Saini, Baharumshah& Law,

2010). Diversification of the economy decreases Dutch disease, expands trading activities and boost financial development (Fisera, &Tiruneh, 2023).

Rule of law, a major sub-component of economic freedom emphasize on the creation of state institutions that ensures private property right, equality before the law, and enforcement of private contract agreements (Yu, Beugelsdijk, & de Haan, 2015). These features of rule of law promotes entrepreneurial activities in resource rich nations, boost confidence in the financial sector to grant more credit facilities to private firms and individuals leading to financial development (Staats & Biglaiser, 2012). Staats & Biglaiser further added that the removal of constraints on free trade in the form of low taxes, and less documentation in resource rich nations attracts foreign investment to the natural resource sector, and improve domestic income; increasing the liquidity of the financial sector.

Against this backdrop, economic freedom has the potency to reduce corruption and rent-seeking, Dutch disease and promote robust institutions that ensures globalization (international trade and foreign direct investment), human capital development, private contract enforcement, and private investments needed in resource-rich countries to promote financial development (Graeff & Mehlkop, 2003; Saha, Gounder & Su, 2009; Feldmann, 2017; Sonora, 2008 Depken & Sonora, 2005; Moussa, Caha & Karagoz, 2016; McMullen, Bagby & Palich, 2008; LE, & Kim, 2020).

Effectively, the operation of the negative influence of natural reserves in the financial sector of resource-rich African states can be controlled, but it will depend on the extent to which private individuals are allowed to own and control income generating assets (Frynas, Wood &Hinks, 2017). In order to

pool resources from businesses and individuals economically engaged by the sector of natural resources and allocate them to sections of the economy where it is needed, robust government establishments as well as rules and regulations that enforces the right of individuals to own and control productive resources, commercial contracts, and promote an efficient financial system may play a crucial role (Hafer, 2013; Terpilih, 2010). Thus, resource-dependent nations in Africa need economically freer environment to harness the advantages accompanying natural resource windfall (Pradhan, Arvin, Hall & Nair, 2016).

Considering that, a sound financial system is indispensable in utilising natural resource revenue to benefit an entire economy, various researchers in the area have probed the reasons for the gaps in financial development among resource-abundance economies and territories across the globe. The significance of economic freedom in this relationship has surprisingly gone underappreciated.

According to De Medeiros Costa and dos Santos (2013), natural resource windfalls do not create unfavorable conditions for the growth of the financial industry. To maximize their benefits, resource-dependent nations (such as those in Africa) must create strong institutions that support private property rights and uphold private contracts. Besides, Shahbaz et al. (2018) argued that contract enforcement and private property right protection will promote financial development in developing nations. Thus, a greater degree of economic freedom may help close several gaps via which natural resource may negatively affect financial sector of African nations, thereby reducing rent seeking and corruption.

Possibly, if resource-rich African countries give critical attention to the promotion of high level of economic freedom, their abundant natural resources could be utilised to improve financial development. This gives rise to the need for an empirical investigation into how the ability and freedom of individuals to own and control productive resources may or may not influence resource-finance linkage of African countries. Thus, examining the resource-finance relationship without consideration for economic freedom makes the findings elusive.

The proceeding section depicts trend of analysis of financial development among the various region across the globe.

Trend analysis on financial development, among Africa, Asia and Pacific Europe, Middle East and Central Asia and Western Hemisphere

Financial development trends analysis among regions on the globe

Data derived from IMF financial development index dataset was used to construct the Figure 1.

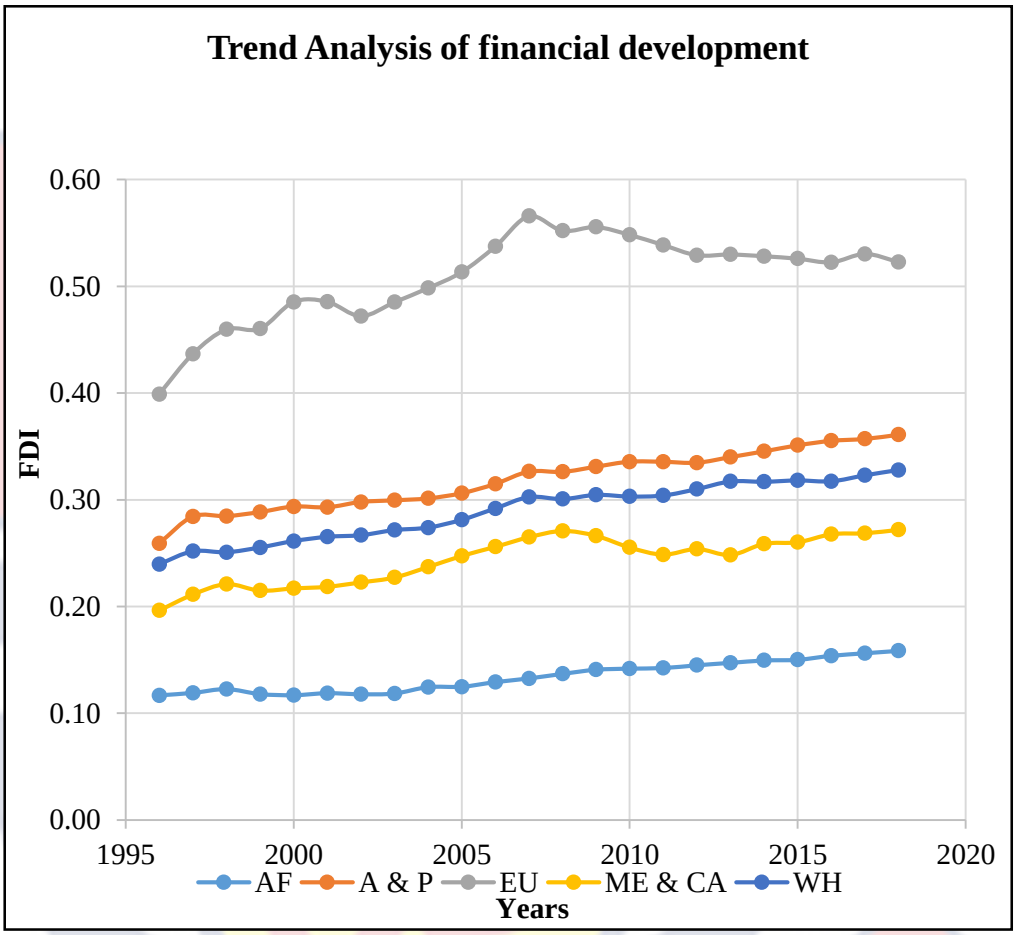

Figure 1: Trends in financial development among Africa (AF), Asia and Pacific (A & P), Europe (EU), Middle East and Central Asia (ME & CA) and Western Hemisphere (WH)

Figure 1 shows that from 1996 to 2018, despite recent growth in financial development, African economies still lag well behind those of Asia and the Pacific, Europe, the Middle East and Central Asia, and the Western Hemisphere. According to this pattern, financial development in African nations is worse than in other regions on the globe. This emphasizes the requirement for further study in the field to ascertain potential causes of the poor degree of financial development and propose remedies to raise it.

Statement of the Problem

Although, resource-finance nexus had received much attention from economist and researchers across the globe, only few concentrates, specifically, on in African countries. Results of the scant research investigation on the influence of natural reserves on financial development in African economies have been equivocal. Whereas some researchers conveyed that natural reserves positively affects financial growth (Zaidi et al., 2019; Shahbaz, 2018; Gokmenoglu & Rustamov, 2019), others predicted that adverse influence of natural resource on financial development in developing economies (Allen, Carletti, Cull, Qian &Senbet, 2010; Ak, Serener & Xiong, 2020; Yuxiang & Chen, 2010).

Studies on the influence of natural reserve exploitation and growth of the financial sector have produced unclear results, which suggests that there may be more factors at play. Furthermore, the scant research on resource-finance relationships in Africa predicts that natural resource has detrimental influence on advancement of the financial sector. Accordingly, published literature suggest that Dutch disease, the desire to increase an economically unearned income and bribery, as well as a lack of strict contract enforcement, are the main conduits via which revenue generated from the natural resource sector adversely influence the advancement of the financial sector (Bhattacharrya, 2010; Beck et al., 2003).

Khan et al. (2020) posited that the possible detrimental effect of resource rent on development of financial sector may be ameliorated by strong institutional structures. By preventing corruption, the desire to increase an unearned income, and Dutch disease, Khan et al. further suggested that strong

institutional structures will lessen some of the ways that resource curse functions to sabotage financial development. Additionally, it was previously claimed by Boschini et al. (2007) that robust economic and governance establishments can address the worrying detrimental influence of natural resource on financial development. Huang (2010) hinted further that strong government establishments guarantee the execution of individuals' contractual agreement and the protection of the freedom of individual to own and control productive resources, which enhances financial development (financial sector efficiency and accessibility).

Existing research (Hadj & Ghodbane, 2021; Bhattacharyya & Hodler, 2014; Khan & Kishwar, 2020) has demonstrated the importance of quality establishments of a country on the influence of natural resource on financial development. The probes on natural resource and financial development, however, focused on the influence of political institutions while ignoring the role of economic institutions. Meanwhile, because governmental institutions are durable, Acemoglu, Johnson, and Robinson (2005) assert that significant changes in the distribution of political power are required to reform them. That is, researchers must take into account economic freedom as a conditional variable as a measure to change the manner natural reserves negatively alter the progress of the financial sector.

Acemoglu et al. (2005) further added that economic institutions, rather than governance institutions, affects the main actors in an economy. Thus, economic freedom has the potency to change the financial sector's resource curse in African counties into blessings. Therefore, it is crucial to take into account how economic freedom alters the nature of influence natural resource

exerts on financial sector of nations with numerous natural reserves. In light of how natural reserves affects the progress of the financial development of countries with numerous natural reserves, this study suggests that economic institutions are more pertinent than governance institutions.

To that purpose, this study differentiates from previous research on natural reserves and financial development connection by moderating the association with economic freedom, which yet to be considered by empirical studies.

In the settings of resource rich developing economies, Dwumfour and Ntow-Gyamfi (2018) is the major empirical investigation on the effect of natural reserve on financial development. Dwumfour and Ntow-Gyamfi used the proportion of domestic loans granted to individuals and firms to gross domestic product to estimate financial development. By isolating the contribution of the individual entities to an economy and failing to take into account a decline in information and transaction costs; the two fundamental drivers of financial intermediation, this conventional indicator of financial growth misses important developments of the financial industry (Hafer, 2013). Financial development, in addition, is a multi-faceted phenomenon and, therefore, these orthodox measures appear unable to represent the entire financial system (Khan et al., 2019; Sun, Ak, Serener &Xiong, 2020; Svirydzenka, 2016).

This empirical investigation, therefore, employs the financial development indicator of IMF; a broad and recent measure of financial development. This indicator proposed by IMF captures all the three scopes of financial development: size of financial market and institutions, the accessibility of financial institutions and markets to private individuals and firms, and how

efficient are the institutions that operate in the financial industry; in order to address the issue of underestimation caused by the financial developments' traditional indicators. Thus, the indicator proposed by IMF is deemed comprehensive to a greater extent and better represents the various dimensions of financial development than the traditional measures (Svirydzenka, 2016).

Purpose of the Study

This empirical work analyses the linkage between natural resource, economic freedom and financial development in African economies.

Research Objectives

Specifically, the objectives of the study are:

1. To ascertain the effect of natural resources on financial development in Africa.
2. To determine the nexus between economic freedom and financial development in Africa.
3. To assess the role of economic freedom in the resource-finance association in African countries.

Research Hypotheses

1. Natural resources have statistically significant negative effect on financial development in African countries.
2. Economic freedom has statistically significant positive effect on financial development.
3. Economic freedom has a statistically significant positive moderating effect on the association between natural resources and financial development.

Significance of the Study

This empirical work examined how economic freedom may or may not affect natural resources and financial development relationship of African countries. The empirical research is important from a management and empirical perspective. By adopting a broad indicator to quantify financial development and economic freedom to study the connection between natural resources, economic freedom, and financial development from the perspective of African nations, the empirical investigation adds to the pull of existing studies on the subject. To assess how economic freedom modifies the link between natural resource and financial development, a moderating variable; collaboration of economic freedom and natural resources, was added to the model. Managerially, this research makes a key contribution towards management of the affairs of African countries. It encourage African countries to strengthen policies that promote high level of economic freedom so that benefits from natural resources will be harnessed to positively influence financial development, given economic freedom was able to alter natural resource to positively influence financial development in African economies.

Delimitation

This research work does not consider economies from other continents of the world as it is carried out mainly on African countries. Due to unavailability of data, 12 countries were excluded from the study. That is, 42 out of the 54 countries on the African continent were selected for this research work. This empirical investigation employed the financial development indicator of IMF developed by Svirydzenka (2016) and the summation of the rents earned from five major economic resources; oil, natural gas, coal, mineral,

and forest as a proportion of gross domestic product to measure natural resources and financial development, respectively. An indicator of economic freedom proposed by Heritage Foundation was, also, adopted to measure economic freedom. These measurements were chosen because, comparatively, they all have wider coverage and are comprehensive.

Definition of Terms

Financial development

According to Svirydzenka (2016), a country's financial sector plays five key roles in fostering economic growth, including mobilizing surplus income, distributing resources to the economy's productive sectors, monitoring these investments, diversifying investments to lower risk, and facilitating trading activities. Therefore, the ongoing development of these five fundamental components of a nation's financial system is described as financial development. A developed financial system enhances growth across the various sectors of the economy via improved savings rate, efficient allocation of productive resources, providing investors with information on lucrative investment opportunities, and promoting the inflow of foreign direct investment.

Natural resource

Wright (2018) defines natural resources as natural assets including minerals, forests, oil, and natural gas that are a gift of nature and could yield economic gains. That is, the extraction of natural resources is independent of other economic processes.

Economic freedom

Economic freedom is the term used to describe a person's right to choose, obtain, and employ productive resources. Its 12 main features are

"property rights, judicial effectiveness, government integrity, tax burden, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom" (Heritage Foundation, 2019).

Organisation of the Study

This empirical investigation is grouped into five main divisions. The research's introduction was well elaborated in the first chapter of the section. The backdrop of the empirical investigation, the statement of the problem, the goal and objectives of the empirical work, the research hypothesis, the relevance of the investigation, the delimitations of the research effort, and the research work's organization are all specifically covered in the first section of this research work.

The evaluation of theories, empirical and conceptual studies related to this research, are all included in chapter two. The third chapter addresses the research methodologies used in this project. The variables used and how they were measured, where data were collected and treated, examination of the data, and a brief description of the research methodology make up the research methodology.

The last but not the least - chapter four - embodies, the outcomes of the regression assessment were given and compared to the study premise. The last section of this empirical investigation, chapter five, uses the results presented and discussed in chapter four as basis to make conclusions, recommendations, and suggestions for future studies as well as summary of the results.

Chapter Summary

Financial development in Africa has been comparatively low over the years. This chapter described the context of the poor financial sector's performance across Africa and justified the basis for this problem statement. This study's specific goal is to clarify how natural resources and economic freedom contribute to financial prosperity in Africa. This is so that economic freedom can better enable Africa's financial development by maximizing the benefits of its natural riches. The chapter's final section offered definitions for the terms used in the empirical investigation in addition to an overview of how the research was structured.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The goal of this empirical investigation was to test how economic freedom may or may not influence the effect of natural on financial progress in the settings of Africa. In light of this, the chapter evaluated theoretical writings on natural resources, economic freedom, and financial progress. The chapter also reviewed relevant empirical literature while keeping the study's goals in mind. The theoretical and empirical reviews provide theoretical and empirical justification that supports this research work. This chapter further presented a detailed review of the concepts of the study. The chapter, in addition, illustrates a conceptual framework, constructed base on the hypotheses of the study. A synopsis of the chapter follows this.

Theoretical Review

This division reviews pertinent theories connecting natural resource windfall with economic freedom and financial development. Two hypotheses are presented in the theoretical review section: and the hypothesis of law and finance the Dutch disease theory. The section concludes by providing a theoretical explanation for the study project. The theoretical review is pertinent to the study because it offers the framework for interpreting the findings from data analysis, as well as support for the suggested solution to the issue at hand and for future research.

Dutch Disease Theory

The theory of Dutch disease describes the structural changes that occur in an economy due to a natural resource bonanza (proposed by Corden & Neary,

1982). The theory explains circumstances in which an export boom—often brought on by a windfall in natural resources—causes an exchange rate to appreciate, which causes a decline of the impact of industrial and agriculture to the economy.

Dutch disease theory divides an economy of a nation into two major subdivisions: the tradable sector (which comprises the natural resource and non-natural resource sector); producing mainly for international market, and the retail trade and services sector; producing mainly for domestic consumption. Natural resource and non-natural resource trading products have their prices fixed by the global market, but non-tradable items have their pricing established by the local market. In this situation, the rate at which the local currency is exchanged for international currency refers to the prices of products manufactured for the local market (non-tradable) in terms goods produced for export - tradable - (Brahmbhatt, Canuto, & Vostroknutova, 2010).

According to Brahmbhatt et al. (2010) and Gelb and Associate (1988), an increase in a nation's exports as a result of a windfall in its natural resources results in devaluation of the local currency compared to international currencies, and an increase in domestic income, which in turn suppresses both the manufacturing and agricultural as well as the natural resource sector, thereby reducing the nation's overall international trade. According to Allen et al. (2010) and Kojo (2015), the spending effect and resource movement effect that happens from a surge in a nation's wealth generally lead to devaluation of the local currency compared to key international currencies and shrinkage of the economy due to over concentration in the resource sector.

Trade volume decreases as manufacturing and agricultural goods become comparatively less competitive due to the overall movement of production elements, primarily, from agriculture and industrial unit of the economy to the natural reserve unit and reduction in the value of the local currency against major international currencies (Wijnbergen, 1984). With less need for funds and financial products to finance the exchange of goods and services and hedge against the possibility of depreciation of the local currency, the decline in trading activities slows the expansion of the financial sector (Khan et al., 2020; Krugman, 1987; Sun, Ak, Serener & Xiong, 2020). Thus, most resource-rich nations experience poor financial development due to the overreliance of the economy on natural resources for foreign exchange.

Dutch disease theory predicts an overall reduction in trade volume when a country experiences a large natural resource windfall as its manufacturing and agricultural products become less competitive (Wijnbergen, 1984). Khan et al., 2020 stressed further that trade enhances financial development by boosting the need for financial products to finance trading activities. This implies that the contraction of trade due to windfall natural reserve will deteriorate the financial sector.

The law and finance theory

According to the law and finance hypothesis, the source of the legal systems and governance structure in each country partly contribute to the disparate levels in the standard of the role played by the financial sector in those nations. La Porta, Lopez-de-Silanes, Shleifer, and Vishny, argued that nations with laws that protect the freedom of individuals to own and control productive resource, encourage individual entities to enter into contracts, and uphold

investors' legal rights will have highly developed financial systems. The hypothesis futher suggest that different countries' degrees of financial development can be ascribed to the origin of laws that protect investors (shareholders and creditors), the laws themselves, and the effectiveness of those laws' implementation (Beck & Levine, 2005).

Common Law and Civil Law (evolved from England and Roman laws, respectively) are the two main sources of laws across the globe. La Porta et al. (1998) further stress that, comparatively, nations that sourced their laws from the Common Law offer better protection to investors than countries that belong to the Civil Laws family. In comparison to Civil Law countries, Common Law countries often display an advanced degree of financial growth.

The origin of laws and their implementation have an impact on the expansion of the financial sector through two means; the political medium and the legal adaptability medium, according to the hypothesis of the law and finance. The political channel explains that different legal systems operating in various countries across the globe offer different levels of protection to investors, and contractual arrangements by private entities form the foundation of financial development. The medium of legal adaptability emphasises that, laws and institutions across the globe vary based on their ability to adjust to unstable socio-economic circumstances. The legal adaptability channel adds that legal systems that adjust well to unstable financial and commercial circumstances best support financial development (Beck, Demirgüç-Kunt & Levine, 2003).

A burgeoning literature affirms that origin of legal system profoundly impact financial development. For instance, Ang (2019) suggests that variations

in the origins of legal systems in various nations may be responsible for variations in financial development (development of banks and stock markets) around the world. Comparatively, commercial and civil laws that originated from the Civil Law family mostly have a low level of equity market development resulting in poor level of financial development (Beck & Levine, 2005). This affirms the theory that, for a country's financial sector to improve, its legal system and institutions must protect investors against expropriation and be flexible enough to adapt effectively to the ever-changing socio-economic needs. That is, rule of law and private property right (a major component of economic freedom) ensures that human interaction is orderly and served the best interest of all society. These empirical findings indicate that economic freedom - private property right, rule of law, and contract enforcement - exerts great influence on the activities of the financial institution, with enormous repercussions for creditors and shareholders. Therefore, the different levels of financial development among the nations are explained by the extent to which private individuals are allowed to own and control productive resources in an economy.

More so, the law and finance theory of financial development contends that supporting financial growth requires strong legal frameworks and economic institutions to protect investors' rights to own and control productive resource, uphold the principles of government by the law, and enforce private contracts. That is, the theory also shares the idea that economic freedom (economic institution) is key in developing sound financial systems in a country. According to Kojo (2015), resource-rich nations can avert the adverse natural resource and financial development nexus by building robust political and economic

institutions. Thus, economic freedom is indispensable in altering natural resource's role in financial development of resource rich nations.

In light of this, this empirical investigation studies how economic freedom may or may not influence the effect of natural resource on financial development by making use of a broad proxy of economic freedom as a moderator. Therefore, this research suggests that the jinx of natural resource thwarting financial development in African nations is not a done deal because laws and institutions that grants freedom to private individuals to own and control economic resources is required to prevent corruption and the ruling class's voracious desire to increase an unearned income, threatening the growth of those economies' financial institutions and market in economies with abundant natural reserves. The law and finance theory was, therefore, crucial to this study since it allowed for the independent determination of the robustness of the consequence than expansion of natural resource has on financial development.

Conceptual Review

This subsection explains pertinent concepts utilised in this study. This study's conceptual base is developed by reviewing relevant studies that apply to the concept of financial development, natural resource, and economic freedom. It also discusses how economic freedom modifies the manner in which natural resource and financial development are related. Thus, this segment aimed at establishing theoretical and empirical basis for the research work.

Financial Development in Africa

Levine (2005) and Svirydzenka (2016) defined financial development as uninterrupted enhancement of the five major functions (saving mobilisation,

resource allocation to the profitable sectors of the economy, monitoring of these investments to avoid morale hazard, diversification of risk to minimise losses, and facilitating trading activities) rendered by the financial market, institutions and regulators of a nation to support economic growth. Therefore, continuous improvement of the financial sector includes the depth and how liquid the financial market is, the financial institutions' readiness to extend loan facility to individuals and non-state owned firms (access), the availability of sustainable revenues to banking and non-banking organisations to provide their product at a lower rate, and the degree of activity of the capital market (efficiency).

The majority of Sub-Saharan African nations have undergone significant financial sector changes over the past few decades, but their level of financial development is still quite low when as against that of emerging states. The financial systems of North African nations, likewise, show a similar pattern to those of Sub-Saharan African nations. That is, there exist a poor degree of financial development in African states (IMF, 2016; Yeboua, 2019; Allen et al., 2014). Therefore, the conditional impact of economic freedom on the kind of connection existing between natural resource on financial development was explored in this empirical work. Most scholarly writings that considered the function of financial markets and institution in economic development of African countries adopted the traditional indicators including loans that was domestically granted to individuals and non-state owned firms as a ratio of GDP, broad money supply, among others to measure financial development. However, Khan et al. (2020) posited that, these conventional measures do not consider the multi-faceted character of financial development into consideration, making their results inconclusive. This study therefore employs

a broad proxy for financial development (IMFs' financial development index) to study the how economic freedom may or may not influence natural resources' influence on the financial sector of African countries.

Economic Freedom

Economic freedom assesses the sovereignty of an individual in regards to their freedom to select, acquire and use productive resources. "Rule of law, government size, regulatory efficiency, and market openness" are the four thematic divisions that make up the economic freedom index of Heritage Foundation's. The four thematic areas are further divided into 12 features; "property rights, judicial effectiveness, government integrity (rule of law), tax burden, government spending, fiscal health (government size), business freedom, labor freedom, monetary freedom (regulatory efficiency), trade freedom, investment freedom, and financial freedom (market Openness)" (Heritage foundation, 2019).

Property right accounts for the degree to which state institutions and government officials respect the rights of private entities to own properties and the existence of adequate laws to defend such right against expropriation by the state or ruling elite. Citizens are motivated to save and embark on entrepreneurial activity when there is recognition and protection of private property right in a country. Judicial effectiveness refers to the existence of an efficient and fair legal system that protects the right of all citizens against violation by government, ruling elite and powerful entities in society. Government integrity captures systemic corruption activities like bribery, nepotism, cronyism, patronage, embezzlement and graft in state institutions. In most cases, excessive government interventions in an economy breeds these

corrupt practices in government institutions. These three sections of economic freedom measures extent to which the laws of the state are regarded as supreme in a country (Heritage Foundation, 2019).

The term "tax burden" describes the amount of financial pressure that the government places on production of goods and services through taxing and borrowing. When the government permits its citizens to retain and control a larger percentage of their earnings and assets, they become economically free. Government spending measures the expenditure, magnitude and the rate at which the government intervene in economic activities. Although, some government spending, especially on public goods, are considered as investments, such investments are funded by exorbitant taxation and are achieved at the expense of other developmental projects. Again, too much government spending may force out investment activities by private entities. Fiscal health measures the extent to which the government of a country respect the principles of limited government. It captures the sectors of the economy where the government will interfere with economic activities and the magnitude of such interventions. “Government size, tax burden, government spending and fiscal health” are the elements of fiscal health (Heritage foundation, 2019).

Business freedom ascertains the capacity of individuals to create and operate a business devoid of excessive and illegal intrusion by agencies of state. It captures onerous and unnecessary laws that increase the cost of production and make it difficult for private investors to succeed. Labour freedom measures private individuals’ ability to find employment opportunities in a country and work, as well as the ability of private firms to freely engage the services of needed workers and lay off redundant workers. Monetary freedom measures

stability of the local currency and the extent to which the forces of demand and supply are allowed to determine prices. Both entrepreneurs and consumers need economically free stable and reliable currency to transact business. It is extremely difficult to create value and plan for the long term when the currency of a country is unstable. These three subdivisions of economic freedom measure regulatory efficiency of the country (Heritage foundation, 2019).

Trade freedom measures extent to which the laws of a country permit its citizens to freely engage in cross border trade without much restrictions. These limitations come tariffs, taxes, outright prohibitions, trade quotas, licensing restrictions, trade standards, and other regulatory measures implemented by governmental organizations. Investment freedom evaluates the magnitude of opportunities and incentives provided by a country for private individuals to undertake entrepreneurial activities and create jobs. Countries with high level of investment freedom experience transparency and equity, support for all types of firms and encourage innovation and competition. Financial freedom is a metric used to determine how open and effective a nation's financial system is to the private sector. Accessible and efficient financial system guarantees diversified savings to entities with surplus funds, credit to lucrative venture, and provide varied payment system and investment services to private individuals and firms to support exchange of goods and services. Financial freedom ensures open banking environment which promotes efficient financial intermediation between private entities with surplus funds and those in need for funds (entrepreneurs) to finance their investment activities. Measures of an economy's market openness include freedom of trade, investment, and finance (Heritage Foundation, 2019). This is why the study determined how economic freedom

may or may not influence natural reserve's relationship with financial development. The extent to which institutional quality influence resource finance relationship has been well investigated empirically. These research, however, focused on governance institutions. According to Acemoglu et al. (2005), once political institutions are in place, they remain unchanged. Thus, there is a need for this study on the consequence of natural resource on financial development in Africa.

Natural Resource in Africa

Natural resources are inventories of raw elements present in the surroundings environment that are both rare, and their exploitation generate economic benefit and competitive advantage to a country (World Trade Report, 2010). Majority of natural resources exported by African nations are unprocessed limiting the amount of revenue accrued from it. This includes earnings from the sale of oil, gas, coal, minerals, and forests products.

During the last few decade, the quantity of natural resources export from African countries has experienced a steady growth rate compared to agricultural and manufactured goods. For instance, as at 2008 natural resources contributed about 73% (US$ 406 billion) of total exports from Africa. However, for the same period, Europe, Asia, North America, and South and Central America recorded 14%, 14%, 20% and 47% respectively (Bokpin, Mensah & Asamoah, 2015).

Sachs (2007) explains that incomes generated from export of natural resources boost economic activities and reduce cost of living. The reduced cost of living and improved income levels increase the quantity of money in

circulation and the demand for financial products. All these improve financial development at the end.

Against these grounds, it is expected that resource boom should lead to improvement in financial development. This is because, the natural resource boom may cause bank deposits to increase, and also attract investment funds from both indigenous and foreign investors. Once more, state-owned companies and private businesses involved in the resource sector are permitted to pay the government dividends and taxes through financial institutions. These funds give financial institutions access to liquidity so they can grant loan facility to individual household and firms, hence fostering growth in the financial sector (Dwumfour & Ntow-Gyamfi 2018; Bhattacharyya & Hodler 2014). Surprisingly, the facts available imply that financial progress in Africa is extremely low. This paper elaborates on how strong institutions could be used to ensure efficient utilisation of the revenue from the natural resource sector to promote development of the financial sector.

Empirical Review

This part analyzed pertinent empirical works on the consequence of economic freedom on financial development, the effect of natural resource on financial development, and how economic freedom may or may not influence resource-finance interaction. How economic freedom affects financial development was then discussed, and ultimately the moderating impact of economic freedom in the resource-finance relationships. First, it analysed empirical investigation on the effect of natural reserve of a country on financial development.

Natural Resource and Financial Development

The naturally gifted resources of a country has a positive consequence on the expansion of the financial sector across the economies of the Organization for Economic Cooperation and Development (OECD)'s 31 Member Nations, claimed Zaidi et al. (2019). Financial development, in the context of the research work, was proxied by the sum of domestic credit granted to individuals and firms as a portion of GDP, loans granted domestically by financial institutions to both private entities and government as a share of gross domestic product, and domestically granted credit by banks to private individuals and firms as a share of gross domestic product. Natural resource was measured by natural resource rent per capita. Data from 1990 to 2016 were subjected to continuously updated modified and continuously updated bias-corrected techniques, and it was discovered that when natural resource development rises over time, financial development will follow suit. This achievement can only be accomplished if natural resource sector income is allocated to productive areas and the growth of human capital (Bokpin et al., 2015).

Gokmenoglu and Rustamov (2019) investigated the consequence of borrowing from the International Bank for Reconstruction and Development and the increased revenue from the natural resource sector on the banking sector in KART nations (Kazakhstan, Azerbaijan, Russia, and Turkmenistan) using data covering 1992 to 2017. This time, Dynamic Ordinal Least Squares was used. NRR was used to gauge resource abundance, whereas the percentage of domestic credits to individuals firms to gross domestic product was used to gauge financial development. The result from the analysis indicates that when

revenue accrued from natural resource increases, financial sector of the sampled countries expands. This is true when the windfalls from the natural resource sector are used to finance other productive activities in the economy, leading to economic development and consequently, increased market for financial products.

Atil, Nawaz, Lahiani and Rouband (2020) also confirm the favourable consequence of natural resource on financial development. Financial development was quantified by a single proxies developed from a number of conventional indictors, including broad money supply (M2) as a proportion of gross domestic product, domestic credit to the individuals and firms as a percentage of GDP, defaulted credit facility as a proportion of total loans (NL), capitalization of the stock market as a percentage of GDP, and traded value of the stock market as a proportion of GDP using Principal Component Analysis. Additionally, natural resource was proxied by price of oil. The study used Pakistani data from 1972 to 2017 and a long run covariability technique. The outcome demonstrate that natural resource and economic development are beneficially related.

All the metrics used by Zaidiet al., 2019 as well as Gokmenoglu and Rustamov (2019) and Atil et al. (2020) to quantify financial development do not explain the multifaceted nature of financial development (depth, accessibility, and efficacy of the institutions that operate in the financial market) in their empirical investigation on how natural resource relate to financial development. Only financial depth is measured by the adopted proxies, leaving out both financial access and financial sector efficiency. To determine how economic freedom may or may not affect natural resource's association with financial

development in Africa, this empirical work used a comprehensive measure that represents the multifaceted nature of financial development.

Additionally, Shahbaz et al. (2017) suggested that the USA's financial development is aided by windfalls from natural resources. The report also emphasized the need for forecasting natural resource availability and demand in order to ensure the financial sector's sustainability. The research work utilised ARDL to data over the period of 1960 to 2016 identify that natural resources in the USA help to spur financial development for all time period. This observed phenomenon is partly due to the fact that the USA typically adds value to its natural resources before exporting them. Natural resource and financial development were proxied by real natural resource rent and real domestic credit to the private sector. Additionally, this indicator of financial development only accounts for the financial sector's accessibility, leaving out its depth, scale, and effectiveness.

There is conflicting evidence in the literature on how natural resource and finance development are related. The consequence of natural resource on financial development in the Chinese, Brazilian, Indian, Mexican, Turkish, the Russian Federation, and Indonesian economy was examined by Sun, Ak, Serener, and Xiong (2020). The findings demonstrate that these countries' natural resources hinder financial progress. The financial development indicator of IMF, was adopted to measure financial development (Svirydzenka, 2016) and aggregate rent from coal, mineral, forest, oil, and natural gas was used to gauge natural resources. In contrast to the conventional measure of financial development, this indicator includes the size of financial market and institutions, as well as the how efficient, and accessible they are to private

sector. The analysis used Pesaran's (2004) cross-section dependence (CD) analysis, which covered the study period from 1990 to 2017.

Yuxiang and Chen (2010), in a comparable study, confirmed that natural resource and financial development are inversely related in China. Utilizing data from 1996 to 2006 and a one-step system GMM estimator, Yuxiang and Chen concluded that China's financial development is negatively impacted by resource abundance. Yuxian and Chen used bank credit facility as a proportion of GDP and the gross output worth of mineral extraction, respectively, as indicators of financial development and natural resource.

Guan et al. (2020) used the ARDL method to identify the nature of the connection between China's natural resource and financial development between 1971 and 2017. The study's conclusions confirms the adverse connection existing between natural resources and financial development of the Chinese economy. To quantify financial development and natural resources, respectively, domestic loan granted by financial institution to individuals and firms were used. Guan et al. added that, resource-rich nations mostly concentrate majority of their resources in the natural resource sector, neglecting other vital sectors (manufacturing and agricultural sector) of the economy.

Additionally, to investigate if the financial development curse exists in these countries, Mlachila and Ouedraogo (2019) applied the dynamic panel general technique of moment to data from 1980 to 2014 for 68 resource-rich emerging nations. Financial development and commodity price shocks had a strong adverse association, according to the study, which used commodity price shocks to approximate natural resources.

Economic Freedom and Financial Development

Hafer (2011), a pioneer empirical work on the consequence of economic freedom on financial development, applied heteroscedasticity-consistent standard errors technique to data from 1980 to 2009. Hafer measured financial development using three different indicators; liquid liabilities of the financial system as a percentage GDP, the proportion of commercial bank assets to all assets held by commercial and central banks, and the percentage of loans facility extended to the individuals and firms by financial institutions to gross domestic product and the Fraser Institute's World Economic Freedom Index, respectively. Economic freedom considerably affects financial development (development of financial intermediaries), according to the analysis's conclusions.

Sufian and Hassan (2011) applied system GMM to data from the five ASEAN banking sectors between 1994 and 2008 to analyse the effect of economic freedom on growth and bank intermediation spread. The findings demonstrate that economic freedom enhances bank operations that aim to raise the spread margin. As an indicator of economic freedom and bank intermediation spread, the matrix of economic freedom proposed by Heritage Foundation and net-interest margins, respectively, were utilized.

Additionally, Salahmanesh, Arman, and Alaei (2021) examined the how economic freedom may or may not affect progress of the financial sector for 152 nations between 1995 and 2015 while taking into account the income levels of the sampled nations. They used the matrix of economic freedom proposed by Faser Institute to estimate economic freedom together with indicators for financial development such as liquid liabilities, the percentage of bank assets, and the share of credits issued to the individual and non-state own firms. The

study utilised a variety of techniques to estimate the models and came to the conclusion that economic freedom provide conducive environment for financial development to strive in all 152 studied economies. The amount influence exerted by economic freedom on financial development is, however, determined by the proxy adopted to quantify financial development.

Parallel to the previous studies, Khan Islam and Akbar (2020) examined the economic freedom-financial development nexus across 87 developing countries from 1984 to 2018. The study employed a panel threshold estimator to examine economic freedom and financial development relationship and indicated that the analysis shows a single threshold of 4.282. That is above the limit of 4.282, which is the point at which economic freedom improves financial development in developing nations. An indicator suggested by Svitydzenka (2016) was used to quantify financial development. Unlike the conventional measures of financial development, this indicator is broad and comprehensive, hence the most appropriate indicator for the study. Economic freedom was also measured using the matrix developed by Fraser Institute.

Moreover, Terpilih (2010) investigated how financial development in Asian nations is impacted by economic freedom. Economic freedom and financial growth were shown to be positively correlated in the examined Asian nations, according to the investigation. The study used data from 1975 to 2006 utilizing least square dummy variable regression (LSDV) to determine the kind of influence that economic freedom exert on progress of the function of the financial market and institutions in the economies of Asian nations. Terpilih estimated economic freedom and financial development using economic freedom index of Fraser Institute and loans to individuals and non-state firms

as a ratio of GDP, broad money supply as a proportion of GDP (M2/GDP), and liquid liabilities as a proportion of gross domestic product.

Natural Resource, Economic Freedom and Financial Development

The conditional results of economic freedom on the nature of the connection that exist between natural resources, and financial progress has not yet been addressed in empirical literature. Yet researchers have emphasised on the necessity of strong institutions to foster the function of financial market and institutions in economies of states with excess natural reserve.

Using a quantile regression estimator, Hadj and Ghodbane (2021) examined the association between natural reserve, human capital, effectiveness of government establishment, and financial development for 10 nations between 1984 and 2016. In nations with strong financial institutions and laws, the outcome gives credence to the fact that that natural resource negatively affect financial development. The controlling of exploitation by government officials and the maintenance of supremacy of the law were found to impact a good effect on the resource-financial connection.

A significant contribution to the discussion on how effectiveness of government establishment affects the manner by which natural resource impacts financial growth was made by Bhattacharyya and Hodler (2014). In countries where government establishments tasked to enforce laws and orders are weak, Bhattacharyya and Holder asserted that natural reserves exert negative effect on financial development. Yet, this undesirable relationship is neutralised by improvements in institutional effectiveness. Data covering the period of 1970 - 2005 for 133 countries across the globe were used. The study adds that the ruling elites in resource abundance countries have no motivation to promote sound

institutions that may prevent them from corruption and voracious rent grabbing and foster contract enforcements as it. This situation, prevalent in most African countries, thwart financial growth. According to empirical work, loans granted to private individuals and non-state owned firms as a proportion of GDP, resource rent as a proportion of GDP, and Polity2 as a gauge of financial development, natural resource availability, political institutions and democracy were all used.

Furthermore, Khan and Kishwar (2020) used an autoregressive distributed lag model to examine how institutional quality affected Bangladesh's resource-finance nexus from 1984 to 2019. The preliminary investigation suggests an adverse effect of natural resources on Bangladesh's banking sector's development. The introduction of institutional quality, however, changed the relationship for the better. NRR as a proportion of GDP, the quality of government index, and loan facility granted to individuals and non-state owned firms as a percentage of GDP were all utilized to quantify financial development, institutional quality, and natural resource quality, respectively.

In a related piece of research, Khan et al. (2020) utilised the system GMM technique to data spanning 87 developing nations between 1984 and 2018 to investigate the consequence of economic freedom on the natural reserves and financial development association. Respectively, financial development, institutional quality and natural resource windfalls, were measured by a proxy of financial development proposed by world bank, aggregate institutional quality variable of the International Country Risk Guide-Political Risk Services' and the NRR as a share of GDP. The analysis's findings suggest an adverse consequence of NRR on financial development. Natural

resources had favorable benefits on financial development, but, after institutional quality was included to the connection. It was also revealed by the findings that a country benefits from natural resources only when it has been able to develop her institutions above a certain threshold. However, if institutional quality was included in the connection, natural resources showed favorable effects on financial growth.

Again, Arellano-Bond system GMM was used by Dwumfour and Ntow-Gyamfi (2018) to investigate the influence of institutional quality in the resource-finance nexus of African nations from 2000 to 2012. The outcome showed that the index adopted to quantify financial development influences the nature of association between link between natural resources and financial development. This research work used Z-score and loans facility granted to the financial sector as a share of gross domestic product to quantify financial development. Natural resource exerted negative influence on financial development when z-score was employed to quantify financial development, and vice versa. The academic investigation adopted a measure of institutional quality created from World Governance Indicators variables and the percentage of overall value-weighted rents to GDP as a proxy for natural resources. The examination also shows that institutions makes the correlation between natural reserve and financial development favorable rather than negative.

Gap after Theoretical and Empirical Review

The evaluation of hypothetical, conceptual and empirical research work demonstrates clearly that both economic and political institutions are imperative to enable resource-rich nations uplift their level of financial development. The reviewed literature demonstrates that legal systems and economic institutions

that ensure the safety of investors' right to own and control productive resources, rule of law and private contract enforcement promote financial development. That is in an economically free environment, financial institutions have greater urge to grant more loans and increase the rage of activities they provide. Additionally, private individual will have greater urge to access financial services to finance their economic activities. Economic freedom has the prospect to change the destructive influence of natural resource into a favourable one by addressing some of the means via which the natural resource works to hinders financial progress, according to the literature study (Bhattacharyya & Hodler, 2014). Despite the aforementioned revelation, empirical research have not yet examined how natural resource may or may not affect the consequence of natural resource on financial development in the economies of Africa.

Dwumfour and Ntow-Gyamfi (2018) and Khan et al. (2020) are the existing studies that come close to the current study. These studies, however, examine institutional quality's role in resource-finance relationship. Dwumfour and Ntow-Gyamfi assert that, natural resource exert favourable influence on financial development in economies with strong government establishment but an adverse correlation in economies where weak institutions exist. The study spans from 2000 to 2012. To measure financial development, the study also used Z-score and proportion of domestic lending to individuals and non-state owned firms to GDP. The results can be overestimated if these conventional markers are used. That is, because financial development is a complex phenomenon, these conventional measurements cannot accurately capture the entire financial system (Khan et al., 2019; Sun, Ak, Serener & Xiong, 2020;

Svirydzenka, 2016). According to Khan et al. (2020), an upsurge in natural resource windfall, consequentially, declines the continuous improvement in the role of financial markets and institutions in an economy of developing nations. However, institutional quality has the power to turn this association from negative to positive.

The consequence of natural resource on financial development has thus been neglected by scholars, rendering the results unconvincing. Therefore, to evaluate the resource-finance relationship in Africa, this literature used a broad proxy and more recent data of economic freedom and financial development.

Other Determinants of Financial Development

Economic growth, gross fixed capital formation, human capital, trade openness, and inflation are all taken into account in this study. According to Patrick's (1996) demand-following hypothesis, financial development and economic growth have a favourable causal link. That is, increased financial development results from improved economic growth. According to Patrick, expansion of real output, the commercialisation and monetisation of agricultural and conventional subsistent products will drive up financial development (Murinde & Eng, 1994). The financial sector will grow due to a rise in the need for financial product resulting from development of the economy.

Gross fixed capital formation is found to exercise favourable influence on financial development, according to Dorrucci, Meyer-Cirkel, and Santabárbara (2009). Klein and Olivei (1999), earlier, stress that fixed capital accumulation leads to improved financial depth, especially in countries with a robust political and economic institution. According to Zhang, Zhu and Lu (2015), trade openness is a positive causal element of both effectiveness and

competitiveness in the financial market. However, the amount of financial development is adversely impacted by trade openness. This argument is comparable to that of Rajan and Zingale (2003), who contend that concurrent financial market and trade openings have advantageous effects on financial development.

According to Bittencourt (2011), inflation and financial progress are negatively correlated. This means that achieving high financial development requires low and stable inflation. Satrovic (2017) argues that education positively affects financial development by reducing information asymmetry. A high level of human capital, without considering external factors, will improve demand for financial product. Because the literate are superior position to read and comprehend complex financial information, there will be a high rate of citizen participation in the financial system of a nation.

Finally, Law and Azman-Saini (2012) posited that government establishment has favourable significant influence on financial development in all states at different level of economic development. They stressed that stock market has nonlinear relationship with financial development. This situation is very common in low-income countries and that improving institutional quality above certain threshold level will cause stock market development.

Conceptual Framework

Conceptual framework is the pictorial representation of the main variable, or ideas and theories of the study that depicts the linkages that exist between them (Antonenko, 2015). As a result, it uses a visual approach to summarize all the crucial data presented in the study's literature review portion.

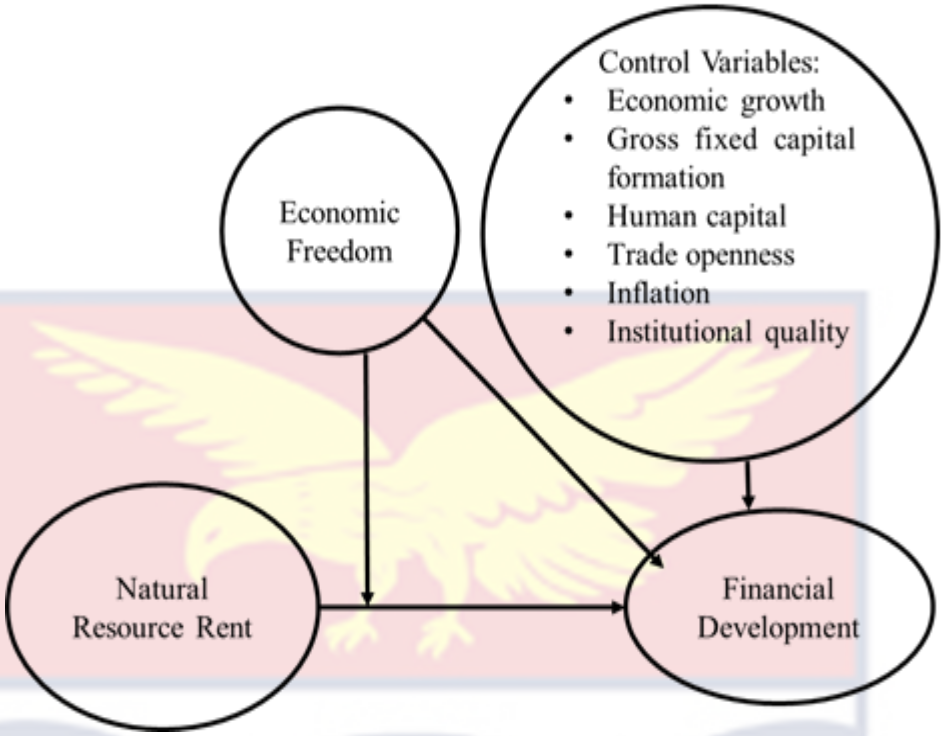

Figure 2: Conceptual framework

Source: Authors' own Construct (2022)

Figure 3 depicts the conceptual framework of all the variables; exhibiting the linkage between them as well as the theoretical basis for this research work. The framework was used in the study to show how economic freedom affects the consequence of natural resource on financial development in Africa. It also made adopted evaluated theories and empirical literature. The unfavourable influence of natural resource in an economy operates in financial sector of African economies, according to existing literature. However, because some of the media through which the resource curse acts could be covered by a considerable economic freedom, this relationship does not fulfill the faith. Economic growth, gross fixed capital formation, human capital, trade openness, inflation, in addition to institutional quality were included as additional control variables in this study.

Chapter Summary

At first, the theories applied in this research work are explained by the chapter. The Dutch illness theory and the law and finance theory were the two main hypotheses used in this investigation. The Dutch disease theory explains that when a country experiences natural resource windfall, overall trading activities declines and subsequently, causes demand for financial services to fall. The origin of laws defending investors' rights, the laws themselves, and the effectiveness of their enforcement, according to law and finance theory, all exert a favourable outcome on the expansion of the financial sector. The chapter also accounted for the empirical justifications for the association between natural resource wealth, economic freedom, and financial development, in addition to the links between control factors and financial development.

CHAPTER THREE

RESEARCH METHODS

Introduction

This study explored the linkage between natural resource and financial development in African nations taken the level of economic freedom that exist in various economies into consideration. The research paradigm, research approach, and research design are all expatiated in this section. The segment also provides definition of the variables in the context of this research investigation, source and measurement of the explanatory and response variables used in this writing, stipulation and justification of the models adopted as well as the technique adopted to process and analyse the data.

Research Paradigms

Guba and Lincoln (1994) stated that the paradigm adopted in a research study refers to the set of underlying assumptions or worldviews that directs a researcher's actions or an examination into a social phenomenon. The chosen paradigm guides how the researcher collects data for the study, and analysis procedures (Kamal, 2019). The paradigm adopted for a particular research work can either be Positivism, constructivist or Mixed Methods (Denscombe, 2008).This research work follows the positivism research paradigm.

The positivism paradigm of research utilises hypothetico-deductive method to confirm or reject initial assumptions that are usually measured quantitatively, with the aim of using statistical tools to analyse the component of the phenomenon to derive a functional relationship between them (Park, Konge, & Artino, 2020). The Positivist research paradigm focuses on a social phenomenon and is value-free for the researcher, allowing knowledge to be

discovered and ascertained via direct observation or measurement and analysis of the constituent of the object under study. The phenomenon's components are analyzed to determine their functional linkages with one another (Park, Konge, & Artino, 2020). Thus, the positivist approach suggests data collection on the various component of a phenomenon, using a statistical test to either confirm or reject the initial hypothesis and making a generalisation based on the test result.

To this end, this research work collects quantitative data on natural resources, economic freedom and financial development and adopts statistical test of significance to examine the data to confirm the linkage existing among the explanatory and response variables. Last but not least, this study aims to clarify how economic freedom affects the how natural resource relates to financial development in African nations. On this basis, this empirical investigation employs a positivist paradigm of research.

Research Design

The design utilised in a particular empirical studies refers to the methods adopted in gathering research data, examining the data collected, analysing and interpreting the data, and reporting the outcome of the empirical investigation. A research design is said to be exploratory, descriptive and explanatory research designs (Creswell, Hanson, Clark & Morales, 2007).This empirical work employed an explanatory research design.

Rahi (2017) explained that explanatory research helps determine the factors responsible for the occurrence of a particular phenomenon and offers justification to buttress or disprove clarification given earlier. It usually explains a phenomenon in the form of causal relationships. Quantitative data is very relevant to this strategy. In order to explain how economic freedom may or may

not affect the consequence of natural resource on financial development in African states, this empirical investigation utilises an explanatory research design.

Research Approach

A scholar can either adopted a qualitative, quantitative, or mixed research approach (Boru, 2018). A quantitative research method stresses objective measurements of variables, and collects, analyses, and explains numerical data on a particular phenomenon using statistical methods (Antwi & Hamza, 2015). Since economic freedom, natural resource rent, and financial development can all be approximated, quantified, and analyzed using statistical approaches, this study used a quantitative research methodology. The positivist worldview utilises quantitative research method.

This empirical study is entirely quantitative. This is because it investigates how natural resource may impact financial development, how economic freedom may impact financial development and how economic freedom may or may not influence the kind of effect natural resource exert on financial development in Africa, using quantitative data. This study, in addition, advanced a hypothesis based on the theory that would be tested to either reject or strengthen the Dutch disease and the law and finance theory.

Data Collection Procedure

Every variable utilised in the empirical investigation was measure by secondary data. The IMF's financial development databank, worldwide governance metrix dataset, and world development metrix dataset were, respectively, the source of annual data on financial development, economic freedom, natural resource rent, and other macroeconomic indicators (control

variables) for 42 African countries. Forty-two of the 54 nations on the African continent were chosen since the data were available. Also, the duration of the study spanned from 1996 to 2018. The data period was chosen since the financial development statistics covered the years 1996–2018.

Measurement of Variables

Modern-day financial development has three major features; size of the financial institutions and market, accessibility of financial market and institutions to people and non-state owned firm and efficiency of financial market and institutions (Svirydzenka, 2016). Financial system, also, embodies organisations that operate in the insurance industry, mutual funds industry, and pension funds industry and venture capital industry, just to mention a few. These features of the financial system make it a complex and multi-faceted process. As a result, using a single traditional indicator will not represent the entire dimensions of financial development and may cause the result to be inaccurate. To solve this issue, Svirydzenka (2016) created the IMF's Financial Development indicator as a proxy for financial development. The efficiency, depth, and accessibility of the financial system are all factors that the IMF's Financial Development indicator takes into account. Comparing it to other financial development metrics, the IMF's Financial Development proxies is broad and comprehensive.

The Bank of International Settlement (BIS) debt securities database, Dealogic corporate debt database, the IMF Financial Access Survey, and other sources are used to compile data for the IMF's financial development indicator, categorised into six sub-sections: financial institution depth, financial institution access, financial institution efficiency, financial market depth, financial market

access, and financial market efficiency. The six sub-indicators are subsumed into two major categories—financial institutions and the financial market—and finally summed into a distinct index; financial development.

To quantify economic freedom, the study adopted the matrix from Heritage Foundation's. "The right of individuals to own a property, efficacy of the judicial system of a country, government integrity, and the amount tax imposed on individuals engaged in economic activities, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial market freedom are the 12 characteristics of economic freedom", Heritage Foundation (2019). The supremacy of the laws of the country, size of the government, regulatory effectiveness, and market openness are the four major categories under which these 12 characteristics are further divided. An overall economic freedom variable is calculated by averaging these four factors. From 0 to 100, the economic freedom index is rated, with 100 denoting a more free-market economy. A total index for economic freedom is created by evenly distributing and averaging each of these variables.

This study used NRR as a share of GDP to quantify natural resources. The term "natural resource rent" denotes the total rents received from the production of minerals, coal, oil, and wood. The World Development Indicators (WDI) during the empirical investigation period are the source for this information. NRR was employed to measure financial development mainly for two reasons: First of all, this measure of natural resource revenue captures all revenue generated from the natural resource sector that is likely to be misappropriated through corruption and voracious rent-seeking behaviour from

the ruling elite. Again, this measure has vast longitudinal and cross-sectional coverage.

Trade openness, gross fixed capital formation, economic growth, exchange rate, inflation, and institutional quality make up the macroeconomic indicators that were controlled in this study. The response variable, the explanatory and control variables used in empirical work, how they were measurement, and how the data were obtained are all recapped in Table 1.

Table 1: Variable Measurements

Variable	Measurement	Source of data
Financial Development	IMFs' financial development index Ranges from 0 to 1	Financial development dataset–IMF (1996-2018)
Natural Resource Abundance	Total Natural resource rent. Summation of rent from oil, natural gas, coal, mineral and forest as a percentage of GDP	World development indicators (1996 – 2018)
Economic Freedom	An overall index of the 12 economic freedom indicators	Heritage Foundation index (1996 -2018)
Rule of Law	Average of judicial effectiveness, government integrity and property right	Heritage Foundation index (1996 – 2018)
Government Size	Average of tax burden, government spending, and fiscal health	Heritage Foundation index (1996 – 2018)
Regulatory Efficiency	Average of business freedom, labor freedom, and monetary freedom	Heritage Foundation index (1996 – 2018)
Market Openness	Average of trade freedom, investment freedom and financial freedom	Heritage Foundation index (1996 – 2018)

Table 1 continue		
Institutional Quality	Average of the six institutional quality variables from WGI	Worldwide governance indicators (1996 – 2018)
Fixed Capital Formation	Gross fixed capital formation as a percentage of GDP	World development indicators (1996 – 2018)
Human Capital	Enrollment in secondary education	World development indicators (1996 – 2018)
Economic Growth	Annual growth rate of GDP	World development indicators (1996 – 2018)
Trade Openness	Sum of export and import as a percentage of GDP	World development indicators (1996 – 2018)
Inflation	Annual changes in consumer price index	World development indicators 1996 – 2018

Source: Author's compilation (2022)

Models Specification

Model 1 - The Association among Natural Resource, Economic Freedom and Financial Development in Africa

This empirical investigation utilised Model 1 from Khan et al. (2020) and Guan (2020) regression equations to examine the separate consequence of natural resource and economic freedom on the financial development of African nation-state economies. Model 1 represents the regression equation for objectives one and two. These two studies indicate that economic growth, institutional quality, human capital, rent from natural resource, and the lag of financial development are the main factors influencing financial development. As justified in chapter two, the study adds economic freedom to the model and controls for other macroeconomic indicators that were not examined by Khan et al. and Guan.

Financial development is a process; its initial stage affects the current stage. In light of this, to make room for a partial adjustment of financial development to its long-run equilibrium value, the dependent variable, lag of financial development, was added. Below are the baseline models of Khan et al. (2020) and Guan (2020). These are followed by the model employed for this research work.

The base line models are first stated, after which the models used for the study is also presented

$\ln FDI_t = \beta_0 + \ln\beta_1 NRR_t + \beta_2 \ln GI_t + \beta_3 \ln HCI_t + \beta_4 \ln RGDP_t + \varepsilon_t$ …. The baseline model of Guan (2020)

$\ln FDI_{it} = \alpha + \beta_1 \ln FD_{it-1} + \beta_2 \ln NRR_{it} + \delta \ln IQ_{it} + \rho \ln NRR * \ln IQ_{it} + \gamma \ln X_{it} + \mu_i + \varphi_t + \varepsilon_{it}$ …. The Khan et al. (2020) baseline model

where:

$\ln FDI_{it}$ represents natural log of financial development

$\ln FD_{it-1}$ represents natural log of the lag financial development

lnNRR represents natural log of natural resource rent as a share of GDP

lnGI represents natural log of globalization

lnIQ represents log of institutional quality

lnHCI represents natural log of human capital index

lnRGDP represents natural log of economic growth

lnX represents natural log of vector of control variables

μ represents country fixed effect

φ represents year fixed effect

ε represents error term.

Model 1

$$\ln FD_{it} = \beta_1 FDI_{it-1} + B_2 \ln NRR_{it} + \beta_3 \ln EF_{it} + \beta_4 \ln X_{it} + \mu_i + \varphi_t + \varepsilon_{it} \ldots\ldots\ldots\ldots (1)$$

where:

FDI_{it} is the financial development index

FDI_{it-1} is the the lag financial development index

lnNRR is the natural log of natural resource rent

lnEF represents natural log of economic freedom

lnX represents natural log of the vector of control variables

μ represents country fixed effect

φ represents year fixed effect

ε represents error term.

Model 2 – The Moderating Effect of Economic Freedom in the Association between Natural Resources and Financial Development of African Economies.

Economic freedom and natural resource rent were interacted and the product was added in the equation as a separate explanatory term. The objective three of the empirical research was to determine how economic freedom affects the consequence of natural resource production on financial development. A significant positive coefficient of the moderation variable would mean that economic freedom would improves the influence of natural resource on financial development in Africa, whereas a significant negative coefficient would mean that economic freedom would worsen the consequence of natural resource on financial development in the African situation.

Model 2 is given as:

$$\ln FDI_{it} = \beta_1 FDI_{it-1} + B_2 \ln NRR_{it} + \beta_3 \ln EF_{it} + \beta_4 \ln NRR_{it} * \beta_4 \ln EF_{it} + \beta_5 \ln X_{it} + \mu_i + \varphi_t + \varepsilon_{it} \ldots\ldots\ldots\ldots (2)$$

where:

$\ln FDI_{it}$ is the natural log of financial development index

$lnFDI_{it-1}$ represents the natural log of the lag of financial development index

lnNRR represents natural log of natural resource rent

lnEF represents natural log of economic freedom

$lnNRR_{it} * lnEF_{it}$ is the natural log of the moderating term of natural resource and Economic Freedom

lnX represents natural log of the vector of control variables

μ represents country fixed effect

φ represents year fixed effect

ε represents error term.

Data Processing Tools and Analysis Technique

This empirical studies employed System Generalised Method of Moment (GMM) panel technique and Stata version 15 to approximate the models. The first difference GMM panel estimator was developed by Arellano and Bond in 1991. Arellano and Bond - Difference GMM estimator first transforms all explanatory variables, typically by first differencing (removing all fixed country effects in the process), and then uses an instrument with the lagged response variable and any other endogenous variables with variables that are believed to be uncorrelated with the fixed effects to eliminate dynamic panel bias (Roodman, 2009).

However, difference GMM may produce wrong approximations of results, especially, with consistent regressors (Arrelano & Bover, 1995). In

other words, lagged level variables are poor tools for the difference equation. Blundel and Bond (1998) propose system GMM to treat the weak instrumentation in difference GMM. System GMM strengthens difference GMM by simultaneously evaluating differences and levels, the two equations being distinctly instrumented.

Either a one-step estimator or a two-step estimator can be used in a system GMM. The study uses a two-step GMM with forward orthogonal deviations in place of differencing (supplements Arellano & Bover, 1995). The two-step system GMM approach is adopted because it deals with heteroskedasticity and potential problem of endogeneity as natural resources and economic freedom are known to have a bi-causality relationship with financial development.

By limiting the moment conditions to a maximum of two lags of the response variable, the forward orthogonal deviation accounts for cross-sectional dependency and controls for instrument proliferation (Asongu & De Moor, 2015). In order to prevent instrument proliferation, Mileva (2007) asserts that the amount of instruments must be fewer than or same as the number of groups.

The Arellano and Bond serial correlation test and the Sargan-Hansen test were used to examine for serial correlation and the instrument's validity in order to make sure the GMM estimator was adequate. No autocorrelation for differenced residuals, which is often rejected for the first order serial correlation - AR (1) - process test in the first difference, is the null hypothesis for the Arellano-Bond test for serial correlation. However, as it indicates the existence of serial correlation in levels, the null hypothesis for second order autocorrelation, or AR (2), in the first difference should be accepted.

The Sargan-Hansen test is used by the GMM to evaluate the instrument's validity. The Sargan-Hansen test's null hypothesis is that the instrument as a whole is exogenous. When the null hypothesis is not accepted, the instruments' exclusion restriction is not appropriate. For this reason, the Sargan/Hansen statistic's p-value should be as high as possible.

Chapter Summary

The methodologies employed in this investigation were illustrated in this section. The empirical investigation utilised the positivist paradigm and the quantitative approach of research in the gathering, examination and clarification of the data. The section further explained why these study paradigm and approach should be used. Additionally, the study used an explanatory research methodology in order to explain how natural resources, economic freedom, and financial development relate to one another in Africa. Due to the data's accessibility, 42 of Africa's 54 nations were used in the study. The study created three models to describe the linkage between natural resource and financial development in Africa, the association between economic freedom and financial development, and the moderating effect of economic freedom in this relationship. The research utilised the Generalised Moment Method approach to estimate the model. The use of GMM controls for endogeneity problems in the data.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This part of the research work demonstrates the discussions of the outcomes from the analysis of the data as well as the conclusions. Tables displaying the results provide a concise and understandable summary of the analysis. The data utilized for the analysis are first described in this chapter's descriptive statistics. This is preceded by a correlation analysis, followed by the system GMM and finally, the discussion of the results. The section ends with summary of the chapter.

Descriptive Statistics

It was required to offer the descriptive statistics for the 42 selected African countries to provide better comprehension of the characteristics of the data used in the examination of the research work. Appendix A contains the names of the African countries that were used in the study. The descriptive statistics shown in Table 2 provide the maximum and minimum values, the range of the data, the mean, an estimation of the average, the standard deviation, the number of observations, and the degree of variability.

Table 2: Descriptive Statistics of the Response and the Explanatory Variables

Variable	Observations	Mean	Standard Deviation.	Minimum	Maximum
FDI	966	.147	.112	.017	.646
NRR	956	11.337	11.271	.001	62.04
EF	884	55.013	7.559	23.7	77
TRADE	923	70.507	36.492	20.723	311.354
INFL	915	91.922	40.266	.03	323.608
HCI	555	45.056	26.265	5.283	114.381
GCF	911	20.631	10.736	-21.869	79.401
GDP	961	4.821	7.526	-36.392	149.973
ROL	884	33.406	12.687	10	70.2
GS	884	72.82	10.492	23.95	94.5
REF	884	62.494	8.902	20	85.7
MOP	884	50.964	10.582	15	82.667
INSTQ	839	-.569	.594	-2.1	.88
Jarque-Bera				5.852690	
Probability				0.053593	

Source: Field data (2022)

Note: *FDI = Financial Development Index; TRADE = Trade Openness; EF = Economic Freedom Index (average of 12 subcompnents of economic freedom) INSTQ = Institutional Quality (average of six institutional quality indicator from WGI); NRR = Total Natural Resource Rent; INF = inflation; HCI = human capital; GCF = gross fixed capital formation; GDP = economic growth (annual GDP growth rate) ROL = Rule of Law; GS=Government Size; REF = Regulatory Efficiency; MOP = Market Openess.*

Table 2 gives a concise account of the descriptive statistics of the variables adopted to analyse natural resources and financial development's association in Africa. According to Table 2, the average financial development was 0.147 within the range of 0. 017 and 0.646. In contrast, the average value for the selected 42 African economies was 11.337% for NRR within the range of 0.001% and

62.04%. Regarding the subject of economic freedom, the overall variable had an average of 55.03% within the range of 23.7% and 77%. That instance, economies in Africa scored 77% overall for economic independence, indicating a high level of government intervention in African economy.

An average of 70.507% was observed for trade openness. This demonstrates that during the study period, African economies participated in significant trade openness. The average rate of inflation was 91.922%, and the average rate of gross fixed capital formation was 20.631%. Further, human capital, economic growth and institutional quality recorded an average of 45.056%, 34.327% and -.569 respectively. To account for outliers and significant variance in the data used in the estimation of the correlation and the regression, the study used natural logarithms of every variables adopted in the investigation.

To evaluate if the data were normal, the study used the Jarque-Bera normality test (Yap &Sim, 2011). The data's normal distribution is tested by the Jarque-Bera normality test (Lartey, Mandelman & Acosta, 2012). As a result of the findings, the null hypothesis could not be overruled since the Chi-squared value (JB stat = 5.853) is too large and the probability is higher than the 5% threshold. This suggests that the data is normally distributed or that it originates from one.

Correlation Analysis

For all the variables utilised to analyze how natural resources, economic freedom, and financial growth are related in African states, the correlation outcome are shown in Table 3 as the Pairwise correlation matrix. The correlation investigation targets locating the points where the explanatory

variables intersect with one another. To verify that the explanatory factors are independent of one another and, thus, independently predict the response variable, financial development, the Pairwise correlation is used.

Table 3: Pairwise Correlation Matrix

	FDI	NRR	EF	TRADE	INFL	HCI	GFC	GDP	INST	ROL	GS	REF	MOP
FDI	1.000												
NRR	-0.350*	1.000											
EF	0.488*	-0.539*	1.000										
TRADE	0.303*	0.165*	0.032	1.000									
INFL	-0.079*	-0.079*	0.070*	0.022	1.000								
HCI	0.780*	-0.413*	0.526*	0.470*	0.189*	1.000							
GFC	0.058	0.124*	-0.115*	0.136*	0.165*	0.138*	1.000						
GDP	0.266*	-0.093*	0.054	-0.066*	0.112*	0.275*	0.023	1.000					
INSTQ	0.121*	0.020	0.055	0.137*	0.013	0.024	0.157*	0.048	1.000				
ROL	0.582*	-0.462*	0.764*	0.267*	-0.076*	0.673*	-0.090*	0.069*	0.023	1.000			
GS	-0.144*	-0.115*	0.316*	-0.384*	0.049	-0.119*	-0.095*	-0.036	-0.066	-0.121*	1.000		
REF	0.426*	-0.434*	0.698*	0.077*	-0.007	0.429*	-0.072*	0.040	0.183*	0.543*	0.100*	1.000	
MOP	0.421*	-0.444*	0.790*	-0.005	0.167*	0.363*	-0.060	0.075*	0.041	0.558*	0.124*	0.423*	1.000

* Represents 5,significance levels

Source: Field data (2022)

Note: *FDI = Financial Development Index; Trade = Trade Openness; INSTQ = Institutional Quality; NRR = Total Natural Resource Rent; INFL = inflation; HCI = human capital; GFC = gross fixed capital formation and GDP = economic growth (annual GDP growth rate); EF = Economic Freedom (overall economic freedom index of the 12 economic freedom indicators from Heritage Foundation), ROL = Rule of Law; GS = Government Size; REF = Regulatory Efficiency; MOP = Market Openess.*

A critical analysis of the correlation matrix reveals a negative (-0.350), significant relationship between financial development and natural resource rent. Again, economic freedom and financial development had a positive significant coefficient of (0.488), that is, economic freedom and financial development in African economies have positive association. A detailed analysis of the correlation coefficients identifies the absence of multicollinearity because the correlation between the control variables and each of the economic freedom indicators is extremely low. This is in line with the suggestion of Kennedy, as the strength of the relationships is less than 0.9.

Regression Analysis

This part thoroughly discusses the empirical outcome derived from the estimation of the equations on the goals of the research. The objective of the regression examination was to ascertain the strength and nature of association between natural resource, economic freedom, and financial development in African nations. The outcome for the regression test for the three objectives of the research work are depicted by Table 4 and 5. The results for objectives one and two are presented in Table 4, which details the individual effect of natural resource and economic freedom on financial development in each case separately. Table 5 also shows how economic independence in Africa affects natural resource's association with financial development. When the overall economic freedom variable and its four key sub-indicators (government size, rule of law, regulatory efficiency, and market openness) were employed as the main explanatory variables in the investigation, the outcomes of the approximation are shown in the columns labeled model 1A, model 1B, model 1C, model 1D, and model 1E.

Table 4 illustrates how natural resource and economic freedom, distinctively, affect financial development. Model 1A is a column that illustrates the distinct influences of natural resource and economic freedom on financial development, which is in accordance with objectives 1 and 2 of the research.

Table 4: Individual effects of Natural Resource and economic freedom on Financial Development

	Model 1A	Model 1B	Model 1C	Model 1D	Model 1E	VIF	Tol
L.FD	0.927***	0.940***	0.931***	0.936***	0.998***		
	(0.00946)	(0.00833)	(0.00727)	(0.00634)	(0.00374)		
LNRR	-0.00920*	-0.00574***	-0.00503***	-0.00634***	-0.0139***	3.341	0.299
	(0.00465)	(0.000906)	(0.00109)	(0.00119)	(0.00272)		
LEF	0.0444***					2.003	0.499
	(0.00588)						
LGS		0.0113***				2.245	0.445
		(0.00339)					
ROL			0.00929***			3.368	0.297
			(0.00263)				
REF				0.0827***		2.132	0.469
				(0.00877)			
MOP					0.0158***	4.658	0.215
					(0.00347)		
INSTQ	0.0122***	0.0155***	0.0146***	0.00631***	0.0118***	3.225	0.310
	(0.00256)	(0.00172)	(0.00197)	(0.00150)	(0.00153)		
LGDP	0.00626***	0.00502	0.00585	0.00163	0.00560***	5.893	0.170
	(0.00204)	(0.00330)	(0.00353)	(0.00188)	(0.00113)		
GCF	0.00148*	0.00308***	0.00227*	0.00125*	0.00218**	2.032	0.492
	(0.000827)	(0.000953)	(0.00114)	(0.000718)	(0.000854)		
LInf	-0.0111***	-0.00771***	-0.00567***	-0.00964***	-0.00145	6.307	0.159
	(0.00103)	(0.00108)	(0.000988)	(0.00116)	(0.00122)		
LTRADE	0.00490**	0.00346	0.00445	0.0113***	0.00908***	5.890	0.170
	(0.00186)	(0.00296)	(0.00292)	(0.00356)	(0.00212)		

Table 4: Continued

LHCI	0.0171***	0.0166***	0.0149***	0.0188***	0.00842***	3.009	0.332
	(0.00246)	(0.00211)	(0.00161)	(0.00260)	(0.00181)		
Constant	-0.146***	-0.0270*	-0.0120	-0.313***	0.0215		
	(0.0205)	(0.0154)	(0.0156)	(0.0387)	(0.0157)		
AR(1)	0.013	0.013	0.015	0.015	0.012		
AR(2)	0.379	0.466	0.462	0.424	0.519		
Sargan OIR:	0.445	0.398	0.722	0.635	0.298		
Hansen OIR	0.345	0.389	0.542	0.257	0.503		
DHT for instruments GMM instruments for levels							
Hansen test excluding group	0.093	0.085	0.091	0.141	0.169		
Diff(null H = exogenous):	0.719	0.797	0.923	0.478	0.780		
iv(year, eq(diff)) H excluding group	0.306	0.349	0.489	0.225	0.449		
Diff(null H = exogenous):	0.643	0.639	0.851	0.622	0.993		
Fisher	37407.46	28995.80	12585.64	34516.96	17607.81		
Number of Instruments	38	38	38	38	38		
Observations	376	376	376	376	376		
Number of id	39	39	39	39	39		
Hausman Test Chi-Sq. Statistic (P = 0.1040)			5.387012				

Source: Field data (2022)

Dependent variable: Financial development

Note: $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$. *Further FDI = Financial Development Index; TRADE = Trade Openness; INSTQ = Institutional Quality (average of six institutional quality indicator from WGI); NRR = Total Natural Resource Rent; INFL = inflation; HCI = Human Capital; GFC = Gross Fixed Capital Formation; GDP = Economic Growth (annual GDP growth rate); EF = Economic Freedom (Average of of the 12 economic freedom indicators from Heritage Foundation), ROL = Rule of Law; GS = Government Size; REF = Regulatory Efficiency; MOP = Market Openness. The sub-division for diagnostics indicates p-values of AR (1), AR(2), and Prob(J-statistics).*

Multicollinearity Test

The standard errors of the regression coefficients rise when there is multicollinearity, which is a perfectly linear relationship between the explanatory variables (Midi, Sarkar & Rana, 2010). Such coefficients are unreliable for predictions and, therefore, decreases their precision. The empirical study, also, made use of Variance inflation Factor and tolerance level to determine the presence of multicollinearity amid the dependent variable (Midi et al., 2010) As rule of thumb, the tolerance and the VIF should not be less than 0.1, and greater than 10, respectively. Table 4 shows that the VIF is below 10 and the Tolerance is also above 0.1. This demonstrates that the independent variables are not multicollinear.

Natural Resources and Financial Development in Africa

The principal goal of this empirical work is to determine the kind of effect that natural resource have on financial development of African nations. Table 4 indicates that in each of the five models, the lag of the regressand (L.FDI) has a significant positive connection with the regressand (FDI) at the 1% level of significance. This outcome confirms a number of empirical studies that contend that a nation's prior degree of financial development possibly will exert some degree of influence on the level of financial development for the current year. To put it another way, once the extent of financial development is great in one year, it will probably result in greater level of financial development in the next year. (Dwumfour & Ntow-Gyamfi, 2018; Khan et al., 2020).

Furthermore, column 1 of Table 4 illustrates the conclusions of the nature and the extent of the effect of natural resource on financial development. Natural resources has a significant adverse consequencies on financial

development in the chosen African countries, under Table 4's model 1A, at a 10% level of significance. According to the negative 0.00920 coefficient, an expansion in the production of natural resource will cause to a 0.00920% decline in the financial development of African states. This conform to the assertion of Sun et al. (2020), who posited that natural resources had a unfavorable influence on the degree financial development of emerging nations. These findings demonstrate the resource-finance curse affecting the financial system of African nations. Shahbaz et al. (2018) assertion that natural resource exhibits a favorable link the expansion of financial market and institutions in the USA is refuted by this outcome.

The null hypothesis that natural resource has no significant connection with financial development in African states, is rejected by the significant adverse consequence of natural resources on financial development as seen in column 1 of table 4 above. In other words, the study's results support the research hypothesis that natural resource in African countries has a statistically significant inverse link with their countries' financial progress. This issue arises from the phenomenon that the windfall profits from natural resources will ultimately result in a decline in the volume of international trade and revenue in African economies, which would deteriorate the continent's level of financial growth (Brahmbhatt et al., 2010; Gelb & Associate 1988). The Dutch disease notion put forth by Corden and Neary (1982) is pivoted on this ideology. This conclusion is supported by Guan et al. (2020), who came to the conclusion that natural resources impede financial development because they cause the nation's resources to be concentrated in the natural resource sector while neglecting the agriculture and manufacturing sectors, which are crucial economic sectors.

Contradictorily, these findings, Zaidi et al. (2019) and Atil et al. (2020) argued that expansion in the production of natural resource exercises favourable effect on financial development of Pakistan and the OECD countries, respectively. However, this might not apply to African countries as most developed countries enjoy high level of economic freedom which promotes diversified entrepreneurial and investment activities.

Economic Freedom and Financial Development of African Economies

Additionally, Table 4 demonstrates the outcomes about the how economic freedom affects financial development in the economies of African countries, as well as the association between the four main sub-indicators of economic freedom and financial development. At a 1% level of significance, Model 1A demonstrates that economic freedom significantly expanded the role of financial market and institutions of African nations. Economic freedom is predicted by Model 1A to have a coefficient of 0.0444, meaning that every percentage point rise in economic freedom would result in a 0.04444% expansion in the degree of financial development in Africa. Economically freer nations have very low levels of corruption and rent-seeking, which explains the favorable connection between economic freedom and financial development. The law and finance hypothesis, which contends that the source of laws protecting investors, the laws themselves, and the effectiveness of their implementation accounts for the varying degrees of financial development in different nations, lends credence to this conclusion (Beck & Levine, 2005). That is, nations with high levels of financial development provide better security to private investors by upholding certain right of individuals to own properties and a strong supremacy of the law.

The conclusions of this study are reinforced by the conclusions of Hafer (2011), who stated that economic freedom and financial development have a favorable link. Similar to Hafer's findings, Salahmanesh, Arman, and Alaei's (2021) findings also supported the beneficial relationship between economic freedom and financial progress. They did, however, emphasize that the degree to which economic freedom affects financial development hinges on the type of indicator used to measure it. As indicated by Khan, Isam, and Akbar's (2020) research, economic freedom has a single threshold influence on financial development, after which point it turns the unfavourable linkage between natural resource and financial development into a blessing.

The conclusion as shown in column one of Table 4 and the preceding discussion fails reject the alternative hypothesis that economic freedom has a significant favourable effect on financial development in the economies of African countries for the duration of the empirical investigation but rejected the null hypothesis; economic freedom has no significant effect on financial development in African countries. The findings regarding the linkage between financial development in African nations and the four main determinants of economic freedom (rule of law, regulatory effectiveness, size of the government, and market openness) are further explained in Table 4. The columns labeled Model 1B to Model 1E illustrate them. A positive coefficient of 0.0113 was shown in the model 1B results of Table 4 and was significant at the 1% level of significance. This demonstrate financial development to increase by 0.0113% for every 1% increase in government size. This result means that, improved economic freedom with regards to lower government

expenditure, tax burden and good fiscal health will improve financial development.

The findings is supported by Demirgüç-Kunt (2006) and Terpilih (2010), for hypothesising that excessive public expenditure would raise the needed ratio of return on government securities and consume a significant share of savings created by the financial institutions. This suggests that minimal government spending, low tax burdens, and strong fiscal health will encourage financial development in the 42 African states studied.

Furthermore, model 1C shows that the rule of law have a considerable beneficial link with financial development in African economies. The outcome of model 1C demonstrate that the rule of law has a progressive coefficient of 0.00929, significant at 1% significance level. Thus, an improvement of economic freedom of African countries in terms of property right, judicial effectiveness and government integrity will enhance financial development. This means that African countries need legal systems that will ensure private property right, effective judicial system and reduce corruption by government officials.

Secure property right encourage citizens to save part of their income and undertake long-term investment activities leading to financial development. Again, regarding judicial effectiveness, a well-functioning judicial system protects the right of all citizens and firms against violations by government and powerful entities in the country. This act boosts the confidence of investors to increase production and undertake more entrepreneurial activities which creates more income and boost financial development. Furthermore, in countries with low levels of corruption, resources (funds) are allocated to productive areas of

the economy, resulting in higher economic activity and financial progress. This theory is shared by Beck and Levine (2005) who posited that financial development is high in countries where their legal system supports private contractual arrangement, and offers maximum protection to investors.

Giving the outcome of the analysis of Model 1D in Table 4, regulatory efficiency exhibited a positive significant coefficient of 0.0827, at the 1% significance level. Thus, when regulatory efficiency makes 1% progress, financial development will increase by 0.0821%. This indicates that when economic freedom improves with respect to business freedom, monetary freedom, and labor freedom, financial development will improve. The cost of production in countries with less interference in economic activities (business freedom) is very low and promotes high level of financial freedom. This concept also applies to a high level of monetary freedom, as enterprises and consumers demand stable and trustworthy currency as a unit of account, medium of exchange, and store of value. This finding is consistent with Terpilih (2010) contention that financial development flourishes in countries that create a favourable climate for corporate success.

Furthermore, market openness, the third component of economic freedom, had a positive coefficient of 0.0158, which was significant at the 1% significance level. The implication of this favourable coefficient is that when economic freedom of a country regarding trade freedom, financial freedom and investment freedom increases by 1%, financial development will also rise by 0.0158 units. An increased market openness will promote international trade. In order to decrease risk and hedge against depreciation of the local currency, foreign market participants require more financial instruments such as bills of

exchange, bills of lading, letters of credit, certificates of origin, consular invoices, and insurance documents. The rise in demand for these financial products also promotes financial development. Thuy and Trong (2021) agreed to this notion by stating that the financial sector of a country expands when it open its borders for internal trade activities to be carried out.

Results for the effects of control variables for the models examining the relationships among natural resource, economic freedom and financial development in Africa

Table 4's models additionally account for trade openness, fixed capital formation, economic growth, human capital, inflation, in addition to institutional quality. Per all the models, the yearly growth rate of gross domestic product, which was used as a quantify economic growth, shows a positive coefficient. This suggests that economic growth is a prerequisite for financial development in Africa. The coefficients were significant at the 1% significance level only in Model 1A and Model 1E, however, not in the remaining three models, Models 1B, 1C, and 1D.

Economic growth measured by yearly GDP growth rate showed a coefficient of 0.00626 in model 1A at a 1% significance level. This coefficient indicates that when the economic growth increases by 1%, financial development in Africa will rise by 0.00626%. Economic growth has a coefficient of 0.00560 in Model 1B at 1% significance level. That is, financial development will improve by 0.0056% when economic growth rises by 1%. This conclusion lends support to the demand following hypothesis, which states that economic growth has a one-way causal consequence on financial development (Patrick, 1996). Commercialising farming and conventional basic

items, Patrick said, will boost financial development (Murinde & Eng, 1994). The financial sector will grow due to increased demand for financial services to finance the improved economic activities.

Also, trade openness had a significant positive coefficient in Models 1A, model 1D and model 1E but insignificant positive coefficient in model 1B and model 1C. This indicates the beneficial effect that trade openness has on the financial prosperity of African nations. Trade openness was shown in Model 1A to have a positive significant coefficient of 0.00490, which is noteworthy at the 5% level of significance. This means that financial development in African countries will also rise by 0.0049% when international trade improves by (1%). Trade openness showed a positive significant correlation of 0.0113 in regard to model 1D at the 1% level of significance. This also proposes that when trade openness surge up by 1%, there will be a consequential escalation in the financial development of African states of 0.0113 units. Additionally, model 1E's trade openness coefficient, which is 0.00908 is significant at the 1% level of significance. This is a demonstration of the fact that financial development will increase by 0.00908% when trade openness increases by 1%. Conferring from Zhang et al. (2015), opening of a countries market for export and import has a favorable influence on growth of the financial market and institutions, conforming to these findings. This is because improved trade openness will increase the foreign income and demand for financial products to finance trading activities and hedge against exchange rate exposure.

In all five models, there was a significant consequence of gross fixed capital formation on financial development. This demonstrates that in order to foster high degree of financial development in African states, substantial

amount of gross fixed capital formation is necessary. The coefficient for gross fixed capital formation in model 1A was 0.00148. This suggests that the extent of advancement of the function of financial sector in economic development of African states will grow by 0.00148% when fixed capital formation increases by 1%. The coefficient of gross fixed capital formation in model 1C was once more 0.00227. This demonstrates that for every 1% increase in gross fixed capital formation in Africa, financial development will increase by 0.00227%. Further, gross fixed capital formation had a favourable coefficient of 0.00125 in model 1D. This shows that financial development will progress by 0.00125% when gross fixed capital is enhanced by 1%. At the 10% level of significance, the coefficients for models 1A, 1C, and 1D were all significant. The coefficient of gross fixed capital formation in model 1B was 0.00308, which was noteworthy at 1%. This demonstrates that at 1% significance level, financial development will rise by 0.00308% when gross fixed capital formation rises by 1%. Finally, gross fixed capital formation in model 5 exhibited a positive coefficient of 0.00218 at the 5% level of significance. Additionally, it demonstrate that an increase in gross fixed capital creation of 1% will result in a 0.00218% increase in financial development. The findings of Dorrucci et al. (2009), which maintained that gross capital formation had a strong favourable link with financial development, are consistent with this outcome.

Human capital exhibited a substantial favourable coefficient in each of the five models, and its coefficients were all significant at the 1% level of significance. Human capital showed a positive coefficient in model 1A of 0.0171, which means that financial development rises by 0.0171% in African nations when human capital rises by 1%. Additionally, model 1B shows a

human capital coefficient of 0.0166. This suggests that when human capital rises by 1% in Africa, it will cause improvement in the function of financial system towards economic development by of 0.0166%. Furthermore, model 3 offers a coefficient of 0.0149, indicating that when human capital increases by 1%, financial development will shoot up by 0.0149%. Human capital has a coefficient of 0.0188 in model 1D. This indicates that when human capital rises by 1%, financial development will also pick up by 0.0188%. Last but not least, model 1E shows a human capital coefficient of 0.00842. This demonstrates that the 42 African countries' financial development will grow by 0.00842% for every percentage increase in human capital.

This result aligns with Satrovic (2017), who argues that education affects financial development positively by reducing information asymmetry in the financial market. Lacking any outside influences, a greater degree of human capital will grow the need for financial products. This is as a result to their ability to understand complex financial information, well-educated persons are more likely to engage in the financial sector of their nation.

At a 1% level of significance, models 1A, 1B, 1C, and 1D found that inflation had a significant adverse consequence on the financial development of African states. Even though it was negative, the inflation coefficient in model 1E was insignificant. At a 1% significance level, inflation in model 1A revealed a negative coefficient of 0.0111. This implies that when inflation in African countries rise by 1%, the degree of financial development will fall by 0.0111%. Also, model 1B demonstrates that when inflation rises by 1%, financial development in African economies will decrease by 0.00771%. This is because the coefficient of inflation in model 1B is negative 0.00771. Moreover, model

1C shows a negative coefficient of 0.00567 for inflation. That is, a percentage rise in inflation will cause financial development in African countries to decline by 0.00567%. In model 1D, inflation had a coefficient of negative 0.00964. This means that when inflation rises by 1% in Africa, correspondingly, financial development will rise by 0.00964%.

This outcome is consistent with Bittencourt's (2011) hypothesis that inflation exert an adverse influence on financial development. Therefore, achieving a higher degree of financial development in Africa begins with low and stable inflation. Inflation depreciates the real value of savings. This phenomenon reduces funds mobilized by banks and therefore makes fewer resource available for investment purposes.

Furthermore, at the 1% significance level, institutional quality exhibited a favourable influence on financial development in each of the five models. The coefficient for institutional quality in the first model, model 1A, was 0.0122. This means that for every 1% enhancement in the robustness of institutions in African countries, the degree of financial development rises by 0.0122%. Furthermore, model 1B shows that a percentage surge in institutional quality causes a 0.0155% upsurge in financial development. This is because the coefficient of institutional quality in model 2 is positive 0.0155. Model 3 as well, displays a positive coefficient of 0.0146 for institutional quality. This points out that financial development will expand by 0.0146%. This applies to model 4 and model 5 as they all have positive coefficient which are significant at 1%. This is consistent with Khan et al. (2020) contention that the robustness of institutions has a considerable affirmative link with financial development.

Diagnostic tests for the models in Table 4

To evaluate the suitability of the models and the reliability of the instrument, this study employed two diagnostic tests (Hansen OIR and AR2 test). The error term's autocorrelation is tested using a null hypothesis; no serial correlation in the AR (1) and AR (2) processes in the original difference. The first order serial correlation in first difference should have a p-value of less than significant at 5%, which indicates that AR (1)'s null hypothesis has been rejected. But in order to fail to reject the null hypothesis that there is no autocorrelation in AR(2), the p-value of the second order serial correlation test in first difference must be over 5% (Agyeman et al., 2018). The initial error term is serially uncorrelated, proving that the null hypothesis that there is no second-order serial correlation is unfounded and confirming that the moment specifications are accurately given. In light of this, the p-value for AR (2) ought to be larger than 0.05 (Mileva, 2007). At a 5% level of significance, all the values derived for the probability in Table 4 were significant, rejecting the null hypothesis that there is no autocorrelation in the AR(1) process of the first difference. On the other hand, at the 5% significance level, the probability values for second order serial correlation in all of the models in Table 4 were insignificant, indicating failure to reject the null hypothesis of no autocorrelation in the AR(2) process. This means that autocorrelation has been eliminated from the model.

Again, the probability values for the Wald test in both models revealed rejection of the null hypothesis that all explanatory factors are concurrently zero, proving that all explanatory variables collectively fully explain the response variable. The Hansen test of over-identifying constraints is used to

evaluate the null hypothesis of the instruments' general validity. In other words, the instrument as a whole are exogenous. The probability values for the Hansen test in Table 4 were insignificant for all models, implying rejection of the null hypothesis and demonstrating the validity of all instruments employed in the models as well as suitable exclusion restriction of the instruments.

The Hausman test, employed to investigate the adequacy of the random model used. The Hausman test's examines the null hypothesis that the random effect is the preferred model (Baltagi, Bresson, & Pirotte, 2003). The Hausman test has a higher probability than (5%). This shows that the null hypothesis was not rejected; consequently, GMM is the acceptable model estimator.

The Moderating Effect of Economic Freedom in the Natural Resource Financial Development Relationship in African Economies

Examining how economic freedom may or may not impact the nature of association existing between natural resource and financial development in Africa was the third purpose of this empirical investigations. The total economic freedom term was combined with the NRR to create a variable for the purpose of achieving this goal. In order to test the function of each of these elements in the resource-finance interaction in Africa, the NRR was interacted with every variable of the four sub-indicators of economic freedom to create four new variables. According to Jose (2013) the moderating variable should have significant beta coefficient.

By incorporating an interaction term for natural resource rent and economic freedom, models 2A to 2E in Table 5 below illustrate the controlling impact of overall economic freedom in the relation between natural resource and financial development in African countries. Model 2A illustrates how the

correlation between natural resource and financial development is influenced by the total economic freedom variable. Model 2B to model 2E demonstrate the moderating role of the four sub-indicators of economic freedom on resource-finance relationship.

Table 5: Effects of Economic Freedom in the Natural Resource and Financial Development relationship in Economies of Africa

	Model 2A	Model 2C	Model 2D	Mode 2E
L.FDI	0.921***	0.938***	0.937***	0.981***
	(0.0132)	(0.0130)	(0.00861)	(0.00864)
LNRR	0.00105***	0.000693***	0.000467***	0.0164***
	(0.000204)	(0.000184)	(0.000138)	(0.00487)
LEF	0.0589***			
	(0.00735)			
LGS				
LROL		0.0172***		
		(0.00519)		
LREF			0.0807***	
			(0.00820)	
LMOP				0.0290***
				(0.00857)
LINTERACT	0.00283***			
	(0.000714)			
LGSNRR				
LROLNRR		0.00478***		
		(0.00157)		
LREFNRR			0.00102***	
			(0.000246)	
LMOPNRR				0.0553***
				(0.0180)
INSTQ	0.0148***	0.0147***	0.00687***	0.00707**
	(0.00357)	(0.00315)	(0.00137)	(0.00329)
LGDP	0.00187***	0.000758	0.0011605	0.000390**
	(0.000404)	(0.000459)	(0.00228)	(0.000179)
GCF	0.00195	0.00233***	0.00117	0.0186***
	(0.00136)	(0.000673)	(0.000801)	(0.00422)
LInf	-0.00861***	0.000414	-0.0103***	-0.0170***
	(0.000695)	(0.00133)	(0.00125)	(0.00155)
LTRADE	0.00743*	0.00566	0.0115***	0.00832***
	(0.00412)	(0.00608)	(0.00395)	(0.00228)
LHCI	0.0154***	0.00597***	0.0194***	0.0177***
	(0.00197)	(0.00200)	(0.00344)	(0.00225)
Constant	-0.201***	-0.0628**	-0.306***	0.0447*
	(0.0272)	(0.0277)	(0.0375)	(0.0223)
AR(1)	0.013	0.014	0.014	0.002
AR(2)	0.422	0.493	0.412	0.815

Table 5: Continued

Sargan OIR:	0.789	0.521	0.229	0.943	0.938
Hansen OIR	0.342	0.317	0.756	0.207	0.681
DHT for instruments					
GMM instruments for levels					
Hansen test excluding group	0.051	0.059	0.127	0.134	0.063
Diff(null H = exogenous):	0.819	0.760	0.982	0.392	0.991
iv(year, eq(diff))	0.300	0.279	0.728	0.182	0.633
H excluding group					
Diff(null H = exogenous):	0.682	0.648	0.544	0.561	0.771
Fisher	17892.16	17806.32	62002.90	310474.46	784191.56
Number of Instruments	38	38	38	38	38
Observations	376	358	376	376	358
Number of id	39	38	39	39	38

Dependent variable: Financial development

Source: Field data (2022)

Note: $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$. *Further FDI = Financial Development Index; TRADE = Trade Openness; INSTQ = Institutional Quality; NRR = Total Natural Resource Rent; INFL = inflation; HCI = Human Capital; GFC = Gross Fixed Capital Formation and GDP = Economic Growth; EF = Economic Freedom (Average of the 12 economic freedom indicators from Heritage Foundation), ROL = Rule of Law; GS = Government Size; REF = Regulatory Efficiency; MOP = Market Openess. The subdivision for diagnostics indicates p-values of AR (1), AR(2), and Prob(J-statistics).*

The results from Table 5 provide detailed and intriguing explanation on economic freedom's moderating role in natural resource and financial development relationship. L.FDI, the lag of the regrassand, financial development, shows positive significant coefficients in models 2A through 2E at a 1% level of significance. The collaboration variable between overall economic freedom and rent from natural resources exhibits a positive significant coefficient of 0.00283 at the 1% significance level. The inclusion of the moderation variable in the model results in a positive coefficient of 0.00105, which is significant at the 1% significance level, as opposed to the initial negative significant coefficient of 0.00920, which was significant at the 10% significance level in model 1A.

Economic freedom's coefficient, on the other hand, increased from 0.0444, which was significant at the 1% significance level, to 0.0589, which is likewise significant at the 1% significance level. Stated differently, the term L.INTERACT for the interaction for economic freedom and natural resources emphasizes the relevance of the moderating role of economic freedom in the resource-finance relationship in African economies. This finding demonstrates that, despite the resource-finance curse affecting African economies, economic freedom has the power to reverse this curse by rendering the desire to increase unearned income as well as corruption undesirable. The decrease in the government's desire to increase unearned income and corruption activities will ensure that money obtained from the natural resource sector is directed into lucrative entrepreneurial and investment ventures that promote financial development.

The coefficients in Table 5 compared to the coefficients in Table 4 for the interaction terms of the moderating variable provide credence to the notion that economic freedom demonstrate a favourable, significant impact on the nature of how natural resource relate with financial development. In light of the foregoing, the research project rejects the null hypothesis; economic freedom has no discernible impact on the association between natural resource and financial development in Africa, in favor of the alternative hypothesis; economic freedom significantly and positively modifies the connection between natural resource and financial development.

The theory is that government interventions in resource-rich nations should be reasonably minimal in order to discourage rent seeking and corruption and promote economic activities. That is, economically freer environment which ensures certain private property right, enforcement of private commercial contract, promotes globalization and entrepreneurial activities in resource rich nations promoting financial development.

Additionally, a greater level of economic freedom will make investment and production activities more attractive than rent-seeking and corruption, which operate in resource-rich nations to produce resource curses in the financial sectors of African countries (Azman-Saini, Baharumshah & Law, 2010). The outcome demonstrates that, despite the financial sector's natural resource curse that affects African nations, economic freedom can turn the curse into a benefit. Natural resources, solely, exert an adverse effect on Africa's financial development. Higher levels of economic freedom can, however, be employed to ward against this calamity.

This supports the claim made by the law and finance theory that nations with laws and institutions that ensures an economically freer environment will experience high levels of financial development (Beck & Levine, 2015). This findings conform with a number of empirical research work which argued that globalisation, human capital, institutional quality, private investment, and enforcement of private legal arrangement; which are essential conditions for financial development, are products of economically freer environment (Graeff & Mehlkop, 2003; Saha, Gounder & Su, 2009; Feldmann, 2017; Sonora, 2008 Depken & Sonora, 2005; Moussa, Caha & Karagoz, 2016; McMullen, Bagby & Palich, 2008; LE, & Kim, 2020).

Paralleled to the original negative coefficient of 0.00574 in Model 2 of Table 4, the addition of the government size and natural resource interaction term L.GSNRR causes natural resource to assume a favourable coefficient of 0.000264, significant at the 1% significance level. That is, low government spending is necessary in African countries in order not to crowd out private investment. Also, when given the freedom to keep and manage sizable portions of their income, people and businesses in the natural resource sector will save more money and engage in investing activities. Financial institutions have access to this savings to advance more credits boosting financial development. This finding agree with empirical research works arguing that excessive government spending would raise the level of profit demanded on government securities and would result in the government absorbing a larger portion of savings generated by financial institutions (Demirgüç-Kunt, 2006; Terpilih, 2010).

Additionally, Model 2C in Table 5 illustrates how the relationship between resources and finance in Africa is tempered by the rule of law. Rule of law changed the negative coefficient in model 3 of table 4 from natural resource, which was negative (0.00503), to positive (0.000693). The confidence of individuals and investors in the economy is increased in resource-rich countries where private property rights are recognized and protected by an effective legal system, effective rule of law, and less corruption by government institutions and officials. This encourages investors to use their earnings from the natural resource sector, including their savings, for long-term investments. This is because their investment is protected from theft, expropriation, and embezzlement by government agents. This position was supported by Beck and Levine (2015), who suggested that nations with legal systems that encourage private contractual agreements and provide the greatest level of investor protection will have highly developed financial systems.

Similar to the previous instance, the moderating function of regulatory effectiveness on the influence of natural resource on financial development caused natural resource to attain positive coefficient of 0.000467 at 1% significance level. This is demonstrated by Model 2D in Table 5. This indicates that more economic freedom with regards to freedom for business, freedom for labor, and freedom for money will enhance financial development in resource-rich African nations.

The rationale for the observed relationship in the Model 2D is that less government interference in economic activities (business freedom) and the ability of firms and individuals to freely enter into labour contract (labour freedom) will reduce the cost of doing business. As a unit of account, a

repository of wealth, and a means by which goods are exchanged, investors also want stable and trustworthy currency (monetary freedom). These characteristics of a free economy draw capital investments into the natural resource sector, which spurs financial development. Terpilih (2010), who proposed that financial development thrive in nations that offer greater incentives and an improved investment climate for entrepreneurs to prosper, lends weight to this theory.

Finally, model 2E in Table 5 illustrates the connection between the financial and natural resource growth of African nations. Table 5 makes it evident that market openness also changed the consequence of natural resources on financial development from initial negative 0.0139 to positive 0.0290, which was significant at 1%. That is, enhancement of economic freedom of a country in relation to trade freedom, financial freedom and investment freedom will cause natural resource rent to enhance financial development.

The rationale behind this phenomenon is that majority of the extracted natural resources are being exported. As a result, businesses that deal in natural resources need more financial instruments such as bills of lading, letters of credit, certificates of origin, consular invoices, and insurance documents to lower risk and protect against exposure to exchange rate fluctuations. The increase in need for various financial services encourages the improvement in the role of financial market and institutions towards economic development. Thuy and Trong (2021) also shared the same view by indicating that developing countries should open up their market for international trade as a means of enhancing financial development in the various economies.

Findings for control variables in models examining the moderation effect of economic freedom in natural resource and financial development relationship in African countries

Similar to the models in Table 4, models 2A through 2E also take into account institutional quality, trade openness, inflation, human capital, and gross fixed capital formation. According to Table 5, except model 8 which depicts positive insignificant coefficient, trade openness had a positive significant coefficient in all model. These results show that financial development in African countries are highly influence by financial development. The positive coefficients were significant at 10% in model 2A, 1% in model 2B, model 2D and model 2E. Zhang, Zhu and Lu (2015) also share this reasoning by indicating that trade openness support financial development by increasing income through increased capital and foreign exchange earnings.

Also, Table 5 demonstrates that at economic growth had a positive coefficient in all the model. However, these coefficients were insignificant models 3 and model 4. This highlights the importance of economic growth for the development of the financial sector. Therefore, financial development in African nations will increase as economic growth does. This outcome is, more so, uniform with Patrick (1996), who argued that improve economic growth will promote financial development.

In addition, human capital had a positive significant coefficient at 1% significance level in all five models of Table 5. This also demonstrates that when human capital improves in African countries, financial development will improve. This is due to the fact that most people would be able to decipher

complex financial information and use it to access various financial services. This result also toes the line of Satrovic (2017).

In addition, except for model 2C, where it shows a positive insignificant coefficient, inflation had an unfavourable coefficient at a 1% level of significance. This suggests that financial development declines when inflation surges in African economies. This outcome is in line with Bittencourt (2011) prediction that a country's degree of financial development will deteriorate if overall prices for goods and services continue to rise.

Once more, Table 5 shows that all of the models' gross fixed capital formation coefficients were positive. However, the coefficients were significant in only models 2C and model 2E. This means that expenditure in long term assets provides congenial environment for investment and businesses to flourish through which the economies of African countries might experience greater level development of the financial. Dorrucci et al. (2009) confirmed this finding by indicating that capital accumulation support financial development. On the contrary, this outcome is inconsistent with Klein and Olivei (1999), who argued that gross fixed capital formation has an adverse link with financial development.

In conclusion, Table 5 demonstrates that the robust institutions exhibit a favorable influence on financial development in African nations. With the exception of model 10; significant at 5%, all of the models in Table 5 had institutional quality coefficients that were favourable and significant at the 1% level. This proves that strong institutions are crucial for Africa's financial development. That is, as African institutions' quality rises, so will the continent's financial development. Khan et al. (2020), who asserted that

institutional quality has a substantial favourable link with financial development, concur with this idea.

Diagnostics tests on models examining the moderation effect of economic freedom in natural resource and financial development relationship in African countries

The null hypothesis of no serial correlation in the original error terms across all models is rejected by the models in Table 5 with p-values for the AR (1) process ranging from 0.002 to 0.014 at a 5% level of significance. The p-value for the AR (2) process, on the other hand, varies between 0.412 and 0.815 for all the models in Table 5, suggesting that none of the models successfully rejected the null hypothesis; no autocorrelation in the original error terms. Again, the Wald test's p-value in each model showed that the null hypothesis — which states that all explanatory variables are concurrently zero — was rejected, indicating that the explanatory factors collectively adequately explain the response variable.

In summary, Table 5 shows that none of the models looking at the controlling role of economic freedom in the connection between natural resources and financial growth in Africa exhibit autocorrelation. The p-values of the Hansen test were also insignificant for all models, indicating that the null hypothesis that the instruments as a group are exogenous was not rejected. This indicates that all of the instruments used in the models are correct. It, in addition, shows that the exclusion constraints are appropriate for all of the instruments employed.

Agglomerating Effect in all the Models

The agglomeration effect suggests that the dependent variable, financial development, for the preceding year affects its' present levels. To permit for partial adjustment of financial development to its long-run equilibrium, the previous year's financial development was incorporated to the model. In all models employed to explore the link between natural resources, economic freedom, and financial development in Africa (Tables 4 and 5), the lag of financial development showed a positive significant coefficient that was significant at the 1% significance level.

The positive coefficient for lag financial development in all models implies that prior degree of financial development in African states shows a positive influence on the current level. The coefficients were significant at 1% in all the models, signifying that system GMM is a suitable estimator for the study.

Chapter Summary

This section addressed and debated the relevance of function of natural reserves in Africa's financial development, along with the manner of the role played by economic freedom in this association. To accomplish these goal, the study used the GMM system to evaluate three primary hypotheses of this empirical investigation. This first objective of this empirical research was to ascertain the effect of natural resources on financial development in African economies. The findings of the research as projected in Table 4, rejected the null hypothesis of no significant association between natural resources and financial development in economies of African states in agreement of the

alternate hypothesis of a significant destructive correlation between natural resources and financial development. Thus, objective 1 was achieved.

Similarly, goal two investigated manner economic freedom affects financial development in African economies. Table 4's findings also rejected the null hypothesis of no significant association between economic freedom and financial development in African states in favor of the alternate hypothesis that economic freedom has a favourable significant link with financial development.

The third objective of Table 5's results, which examined how economic freedom may or may not influence the connection between natural resources and financial development in African countries, disproved the null hypothesis that economic freedom reveals no significant moderating influence on this link. In other words, the results did not rule out the alternative hypothesis that economic freedom had a favourable, moderating consequence on the connection between natural resource and financial development in African economies.

This means that African countries need measures that will ensure freer economy to aid harness the benefits that accompany natural resource windfalls to promote development of their financial sectors. The analysis of the descriptive statistics reveals that on average, African economies have enjoyed large amount of natural resource windfall from 1996 to 2018, yet the region, compared to other economies, continue to wallop in low level of financial development. For this reason, Africa has experienced little progress in terms of financial development.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

In this empirical work, the influence of natural resources on financial development in Africa is examined, in addition to the moderating role of economic freedom in this association. The Dutch disease theory, the law and finance theory, and empirical literature served as the foundation for the study's hypotheses. The study developed and examined the following null hypotheses: there is no significant inverse association between natural resources and financial development in African nations, there is no significant inverse association between economic freedom and financial development in African nations, and there is no significant inverse relationship between economic freedom and the affiliation between natural resource availability and financial development.

The positivist paradigm and quantitative approach to academic investigation were adopted to collect data and test the three-null hypothesis. The study also used an explanatory research approach to explain how natural resources, economic freedom, and financial development are related in Africa. Furthermore, the models were assessed using the System GMM panel estimator.

Summary of the Research

Even though Africa has what it takes to improve the extent of financial development of the region, its degree of progress recorded in the economies of African countries has remained low compared to those of their counterparts in other areas. Existing literature has explained this in many different ways and attempted to offer remedies for Africa's weak financial development. The

study's first chapter elaborates on the linkage between natural resource wealth and financial development in African nations, as well as how economic freedom affects this connection. The discussion in Chapter One revealed that the high amount of natural resource rent enjoyed by African countries is not exerting much impact on financial development as a result of the excessive government interventions in the various economies.

The literature review portion that follows deliberated the theories employed in the study and empirical research that underpins the affiliations between natural resources, economic freedom, and financial development. The two theories that were mainly employed to provide theoretical justifications for the study were the law and finance theory and the Dutch disease theory. The empirical literature portion showed that there is some uncertainty regarding the correlation between natural resource development and financial development in Africa. This is for the reason that research on the consequence of natural resource windfalls on the growth of Africa's financial sector have generally been evaluated individually without taking the conditional effect of economic freedom into account.

The present investigative work, conversely, moderated the result of natural resources on financial development of several African economies with economic freedom. The empirical work employed the positivist paradigm of research and quantitative research approach. In addition, the study used an explanatory research methodology to analyze all of the models. Due to a lack of data, twelve countries were excluded. That is, only 42 African countries were studied out of 54.

The study used three baseline models to evaluate the consequence of

natural resources on financial development, economic freedom on financial development, and how economic freedom may or may not affect the nature of influence natural resources exhibit on financial development. To analyze all of the models of this investigative work, the research work employed the system GMM estimator.

Summary of the Findings

This empirical work's findings have made incisive and relevant impact to extant empirical research on the function that natural resource performs to promote growth of Africa's financial industry. Thus, the foremost literature to investigate the correlation between natural resource, financial development and economic independence in the context of African nations. This study set out to accomplish three goals: the first was to determine the consequence of natural resource on financial development in the economies of African nations; the second and third were to probe the consequence of economic freedom on the growth of the financial sector in Africa and the contribution that economic freedom makes to that relationship. Table 6 summarizes the results for these objectives.

Table 6: Summary of the findings on the valuation of the models on the Hypotheses of the study

Hypothesis	Findings
H_1: Natural resources has significant negative relationship with financial development in African countries.	Confirmed
H_2: Economic freedom has positive significant relationship with financial development in Africa countries.	Confirmed
H_3: Economic freedom has significant positive moderating role on the influence of natural resource on financial development in African state.	Confirmed

Source: Authors' Construct (2022)

The conclusion of the first objective demonstrate that natural resources exhibit a major adverse effect on progress of the functions of financial institutions and market towards development of the economies of African countries that were sampled. This shows that the natural resource negatively affects the continent of Africa's financial system. The results of the study's second goal, again, provides evidence that economic freedom demonstrate a favorable and considerable effect on the financial development of African nations. This is an indication that African countries must make policies that ensures high level of economic freedom to promote financial development in their various economies.

Economic independence has the power to turn the resource curse that currently affects the continent's financial sector into a resource blessing. The study's third objective's outcome give support to this. Accordingly, the inclusion of the natural resource and economic freedom's interaction term to the initial equation caused the coefficient of natural resource to change from significant negative 0.00920 at 10% significance level to significant positive 0.00105 at 1% significance level. As a result, even if the data demonstrate that resource curses exist in the financial sector of African nations, a high degree of economic freedom might convert these curses into blessings.

Conclusions

Three major inferences were done from the findings during the examination of the literature. Established on the study's investigation of the effect of natural resource on financial development, it was determined that natural resource windfalls demonstrated a perilous effect on the financial development of African nations. The operation of the resource-finance curse in

the economies of African nations is as a result of several factors which includes poor contract enforcement, improper management of revenue obtained by extracting natural resources, corruption and desire of government officials to increase unearned income, concentration of the nation's resources in the production of natural resource, exportation of the natural resources in their primary state, and Dutch diseases. This suggests that the surge in natural resources has actually slowed Africa's financial progress. A second hypothesis analysis also reveals that for Africa's financial development to advance, private individuals should be allowed to own and control production resources.

In relation to the final hypothesis of the research work, it was determined that the degree of economic freedom present in African economies determines whether the resource-finance curse is a given or not in such nations. Some of the media outlets via which the deleterious influence of natural resource on an economy undermines the financial development of Africa are covered by high degree of economic freedom. This owe to the fact that high economic freedom promotes law enforcement, prevents wastage of natural resource revenue through efficient allocation of savings, and open up the economy for investment leading diversification of the economy.

Recommendations

The sparse empirical literature that is currently available on the consequence of natural resources on financial development in Africa primarily employs traditional measures to quantify financial development. These measures understate the results since they do not account for all three facets of financial progress. In contrast, the present literature employed the IMF's financial development index, which estimates the size, accessibility, and

efficiency of the financial sector in Africa, to examine the effect of natural resource on financial development in the context of African nations.

Using the outcome of the first objective as the basis, the study recommends that manufacturing, agriculture and other vital sectors of the economy should be allotted significant sums of investments in Africa. This will diversify the economy to promote financial development. This will enable the region to harness the benefits that accompany natural resources extraction to improve the financial sector.

Furthermore, with regard to the second and third objectives, the conclusions demonstrate that economic freedom exercise favourable link on the consequence of natural resource on financial developments and has a substantial positive connection with financial development in African countries. That is, African countries should invest more money in creating policies that promote economic freedom in all of its forms because doing so could turn the financial sector's natural resource curse into a favourable one by addressing some of the means via which the resource jinx reveals itself in resource abundant nation.

Suggestions for Future Research

This study relates mainly to economies in Africa. As such, further empirical work can extend the study by analysing economic freedom's role in the resource-finance relationship in different developing economies. In addition, financial development consists of three major components. That is, the financial sector's efficiency, access, and depth. Additional research can assess how these distinct aspects of financial development relate to natural resources and how the combination between economic freedom and resources affects them.

Further research can use economic freedom statistics from other sources, such as the Fraser Institute's world economic freedom index, besides the Heritage foundation's index of economic freedom to look at the resource-finance nexus. The real domestic credit to the private sector per capita, bank loans as a fraction of gross domestic product, and the fraction of bank claims on the private sector to gross domestic product are all additional financial development indicators that could be used in future research to assess how natural resources influence financial development and how economic freedom modifies this relationship.

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APPENDICES

A– A list of a sample of 42African countries and their Sub-Regions

Central Africa Countries	**Southern African Countries**
Cameroon	Angola
Central African Republic	Botswana
Chad	Lesotho
Congo, Dem. Rep.	Namibia
Congo, Rep.	South Africa
Equatorial Guinea	Zambia
Gabon	**Western African Countries**
Eastern African Countries	Benin
Burundi	Burkina Faso
Comoros	Cabo Verde
Ethiopia	Cote d'Ivoire
Kenya	Gambia, The
Madagascar	Ghana
Mauritius	Guinea
Mozambique	Guinea-Bissau
Rwanda	Liberia
Seychelles	Mali
Tanzania	Niger
Uganda	Nigeria
Northern African Countries	Senegal
Egypt	Sierra Leone
Morocco	Togo
Tunisia	